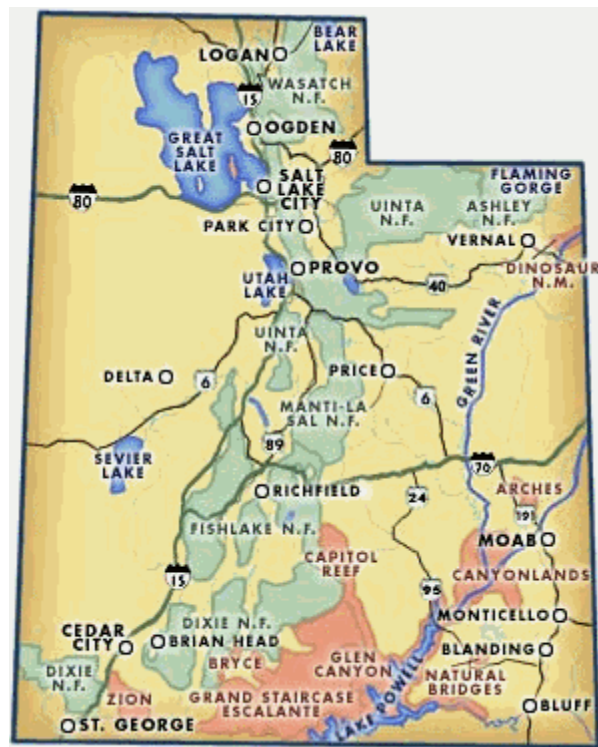


July 2001

# UTAH TECHNOLOGY REPORT

---

## BRANDING



**CRAIG C. BINGHAM**  
**CHRISTOPHER J. PRESSLER**



## TABLE OF CONTENTS

<b>Branding .....</b>	<b>1</b>
What Is Branding?.....	1
What Is Positioning?.....	3
How Are Branding And Positioning Accomplished?.....	5
 <b>Stories of Excellence .....</b>	 <b>9</b>
Utah Is A Place Of New Ideas.....	10
Utah Has A Growing Workforce.....	39
Utah Is Education-Minded and Tech Savvy .....	41
Utah Is Affordable .....	47
Utah Is Safe, Clean, and Livable .....	53
 <b>Conclusion.....</b>	 <b>63</b>
 <b>Endnotes.....</b>	 <b>65</b>



# BRANDING

A brand is the name attached to a product or service. It stands for something. In the case of Utah, it is the name consumers and companies attach to our products, services, and way of life. But a brand also represents many intangibles. It is all of the feelings and perceptions about quality, image, and status. The brand offers a potential customer a guarantee, whether good or bad, that something will happen because of their use of the product or service.<sup>1</sup>

## WHAT IS BRANDING?

### DEFINITION

Branding is the process of attaching a name to a product or service. It answers the question, “What competitive edge do I have to offer that cannot be copied by anyone else?” The brand resides in the hearts and minds of the customers. It is the sum total of all their experiences and perceptions, some that can be influenced and others that cannot. If a strong brand is built, mind-share can be gained. By being in the minds of potential customers, whether students, workers, companies, or researchers, they will think of Utah first when they think of certain categories. However, a brand cannot be everything to everyone. Branding is based on uniqueness by definition. It is the process of setting something apart. It appeals to individual persons or organizations. Utah cannot be all things to all people.<sup>2</sup>

Before a branding effort can begin, a target group needs to be chosen. Based on Governor Leavitt’s goals, it appears the target group would be high-tech researchers, companies, and workers. The Utah brand needs to resonate with these people. They need to see Utah as a place that will support their goals and aspirations. The Utah brand also needs to differentiate Utah from the competition. These target customers need to see Utah offering things that no other state or country can. Finally, the Utah brand needs to motivate its citizens. Without inspiration and adoption from within, it will be very difficult to promote Utah to the rest of the world.<sup>3</sup>

What are the components of a brand? What makes a brand appealing to the target group? The brand identity impacts consumer choices. Brand identity is comprised of:

- Pricing – a component of value
- Distribution – availability
- Quality – impacts customer satisfaction
- Presence – prominence in the media (paid or unpaid)
- Awareness – top-of-mind awareness, residual awareness, and recognition, which are related to presence
- Reputation – enduring public opinion of brand character; difficult to change once established
- Image – perceptions of brand traits or prototypical buyers
- Benefits – certain positive or negative consequences may be equated with use of product

- Positioning salience – differentiation from the competition
- Preference – predisposition to buy displayed by consumers who are establish loyalty
- Share of market – increased share is result of successful branding
- Customer commitment – loyalty is built through long-term branding and close customer contact

What the brand is comprised of and represents helps the brand get into the mind. Utah already is in the mind of many people already. Utah should leverage images already in people's minds and link those images to messages it wants to portray. The brand has to own a place in the mind of consumers. Without that ownership, brands are just names. The best way to own a place in the mind is to do something notable first. A classic marketing example is "Who was the first person to cross the Atlantic Ocean in an airplane?" Charles Lindbergh. But who was the third person to cross the Atlantic Ocean in an airplane? This is a little tougher unless you reword it to make it, "Who was the first woman to cross the Atlantic Ocean in an airplane?" Amelia Earhart. So even if Utah cannot be the first, perhaps first in a slightly different category can make the task easier.<sup>4</sup>

## **OBJECTIVES**

Branding aims to get into the mind. Because of the bombardment of so much information, people have learned to filter out unnecessary information. A brand must get through the information clutter. By competing on features and price, companies have a difficult time creating long-term differences from their competitors. Competitors can copy pricing and features very quickly and inexpensively. Branding is a process of putting a "sticky" name on a product or service. Utah as an organization can brand itself, but competing alone on "price and features" will make it more difficult. A successful brand can separate Utah from its competitors in way that is relevant and motivating to the customers and prospects. It can enhance the perceived value of Utah.

## **STRATEGIES**

Aaker and Joachimsthaler in their book *Brand Leadership*, discuss the new concept of brand leadership versus the classic brand management theories. In this model, decision makers need to set forth what they want the brand to stand for in the eyes of their customers and then communicate that brand identity consistently, efficiently, and effectively. The brand manager in this model should be involved in creating and implementing the business strategy. It is important that the strategy of the organization and the strategy of the brand are complimentary. The brand should not communicate things the overall strategy cannot deliver.

Building brand equity is more important than managing brand image. Managing the brand image is tactical. It is a short-term move that drives short-term results. This is effectively handled within the realm of advertising and promotion. But brand equity is strategic in nature. It is defined as "the brand assets (or liabilities) linked to a brand's name and symbol that add to (or subtract from) a product or service."<sup>5</sup> There are four components of brand equity that guide

brand development, management, and measurement. All need to be nurtured in order to establish brand equity. They are:

- Brand awareness – people like familiarity
- *Perceived* quality – people have perceptions of product quality, although they may be different from reality
- Brand associations – customers need a connection to product or service
- Brand loyalty – at the heart of brand value; customers who are intensely loyal will rarely stray<sup>6</sup>

These four aspects that make a brand, drive brand equity. By properly managing these four aspects, value can be built in a brand name. The challenge Utah has is in developing awareness, perceived quality, associations, and loyalty. This is accomplished through the strategic positioning of a brand.

## **WHAT IS POSITIONING?**

### **DEFINITION**

Positioning is defining a differentiating benefit of a product, service, or company.<sup>7</sup> A good position for Utah's brand will make it unique and valuable to potential and existing customers. Through the use of stories and statistics regarding Utah, a differentiation can be started. As these stories are proliferated throughout the business community and elsewhere, Utah will start to be recognized as a center of achievement.

### **OBJECTIVE**

Analysts at Positioning Strategies, a marketing strategy company in Cupertino, CA, stated,

“The objective of positioning is differentiation, which always involves a comparison of attributes. The result of a comparison of attributes must be a demonstration that a benefit is unique or offered in unique way. To qualify as unique, the benefit must be comparable in one of three ways: a category of one, best within a category, or a substitute for a product from another category. To complete the positioning presentation, it must be made relevant to a well defined market segment.”

They also discussed the Four Forces of Positioning. The forces are vision, risk, differentiation, and competition. Vision must be strong enough to overcome risk. Differentiation must be strong enough to overcome competition.

In order for Utah to attract high quality companies and entice local companies to stay and grow, Utah will need to “position” itself as a state that can support a wide variety of industries.

Positioning of Utah is “defining a differentiating benefit of” doing business in Utah.<sup>8</sup> Utah’s position in the market place is how companies throughout the business world view Utah in relationship to the other states and other nations, the competition. Attributes that will position Utah as an ideal place to do business and grow business are attributes that make Utah unique and are beneficial to target companies. If Utah can project a message with appealing attributes, it can have a chance at getting companies’ attention. In determining the positioning strategy, it is very important to understand Utah from the companies’ point of view relative to other states.

In positioning Utah, the objective also involves answering several questions:<sup>9</sup>

1. What position does Utah already own in high-tech companies’ minds?  
\*Instead of asking what Utah is, we need to determine what we are in the prospects’ minds.
2. What position does Utah want to own?  
\*The keyword here is own. Utah should avoid positioning a concept that is already owned or is too difficult to own.
3. Whom must Utah “outgun?”  
\*Think about the problems from the competitor’s point of view.
4. Does Utah have enough money?  
\*It takes money to gain mind share.
5. Can Utah stick it out?  
\*Utah must pick a positioning strategy and be committed to it for a long time. If Utah gives up, any mind share that is lost beyond that point is very difficult to get back.
6. Does Utah match its position?  
\*The advertisements Utah places have to match the strategic position. Utah must always convey a message equal to the spot we are seeking in the minds of prospects.

In answering these questions, working with ad agencies and publicists will be more effective and will reap more results.

## **STRATEGIES**

There are several positioning strategies Utah can use to promote itself in the eyes of target companies. Utah can promote specific attributes related to Utah. It can highlight the benefits available to companies doing business in Utah. It can position itself directly against a competing state such as California or Texas. This approach is probably less effective in attracting companies from outside Utah. It can also compare itself to different states merely stating the benefits that come from the difference.

In promoting differences between Utah and other states, some things need to be kept in mind when deciding which difference to include. The difference must be highly valued by the specific companies. Other states cannot be offering the same “difference” as Utah. As stated earlier, a unique position can be either in a category of one, best within a category, or a substitute for a state already the best in another category.<sup>10</sup> The difference in Utah must offer a superior benefit than the benefit obtained in other states. The difference must be able to be communicated to the companies in clear and concise way. Other states cannot be able to easily imitate the stated difference if it is to help promote Utah. Finally, the difference has to be economically viable for the target companies. If Utah is to promote itself as a “different” state, the differences have to be selected carefully.<sup>11</sup> Below is a list of seven basic positioning strategies:

- *Product attributes*: What are the specific product attributes?
- *Benefits*: What are the benefits to the customers
- *Usage Occasions*: When and how can the product or service be used?
- *Users*: Identify a class of users
- *Against a competitor*: Positioned directly against a competitor
- *Away from a competitor*: Positioned away from a competitor
- *Product classes*: Compared to different classes of products

Several analyses can be done to help the brand identity and position resonate with the customer. First is the customer analysis. Utah needs to look beyond what companies and entrepreneurs are saying to what are doing because of perceptions. The second analysis is on the competitor. We need to look at what other areas are doing. Utah needs to make sure its strategy will differentiate itself from other states or countries. Again, communication programs need to break through the communication clutter. The final analysis is the self-analysis. A determination should be made whether the brand portrayed has the necessary resources, capabilities, and will to deliver the desired result. If not, it is very difficult to succeed with a branding strategy. The strategy report prepared by the DCED interns has taken a look at major technologically developed competitors. Following the models presented in that paper will aid the Utah technological developers in evaluating competitor and self.

## **HOW ARE BRANDING AND POSITIONING ACCOMPLISHED?**

A marketing campaign or even the marketer does not create a brand or even the position of that brand. Brands and positions are created by customers’ opinions. How they perceive those brands creates the identity. By identifying attributes and benefits that represent the product or service, trust and confidence in the brand will begin to develop. This will drive the brand.

Utah has much to offer. The goal of this paper is to identify the key values and attributes of Utah. The next step is to communicate them, which will develop the trust and confidence if the proper ingredients are in place first. This takes us back to the strategic development of Utah technology. As the proper things come into place and as the values of the state are communicated to potential customers and citizens of Utah, the brand will begin to develop. This is a long process and must be approached with patience and understanding of the key ingredients necessary to foster growth and acceptance.

Branding is accomplished when the name of a product or service resonates with a customer. The key strategic question is “How?” Knowing strategies and understanding the importance of a brand is an important place to start the process of branding. In starting the branding strategy the State needs to focus on three things:

1. Creating visibility
2. Building associations and creating differentiation
3. Developing deep customer relationships

#### Visibility

Visibility has several components. These components include recognition, unaided recall, and top-of-mind status. Visibility is necessary to gain positive product and organizational attributes. By acquiring the necessary visibility, a leadership position can be obtained. As people and organizations become more familiar with Utah’s reputation and attributes, they will begin to see Utah as a leader. But to gain visibility and reputation, a clearly defined strategy has to be in place and the necessary internal components of the strategy must exist.

#### Building Associations/Creating Differentiation

This is driven by brand identity. The aim is not only strong associations, but to make a differentiated brand. Associating Utah with events and people while creating differentiation is probably the best approach. Linking the two together and using what people already have in their mind about Utah can help strengthen the Utah brand.

#### Developing Deep Customer Relationships

For this to happen, the brand has to become a deep and meaningful part of the consumer’s life or self-image. The brand has to become part of the way they do business, strategize, and attract new business. Once the relationship has been achieved, the customer will become very loyal. This must be a long lasting relationship because it is much more difficult to gain a new customer than satisfy a current customer.

### **STRENGTHEN UTAH’S CORE BRAND**

Utah needs a core identity, which will lead to a core brand. A core identity is a small set of words that summarizes what Utah is all about. We have “The Greatest Snow on Earth” written on our license plates. But this does not identify our core value when it comes to technology

development. This identity and brand must be communicated. The competencies we portray must be focused. We cannot be everything to everyone.

One way to strengthen the core brand of Utah is through co-branding. Co-branding or strategic alliances create excitement for the brands involved. However, the question must be asked if the co-branding will be advantageous or disruptive. Perhaps a state with complimentary assets could be approached. This is not a matter of future procedure, but of investigation.

The purpose of this paper is to present ideas and questions with stories that tell the Utah story.<sup>12</sup> Since the marketing firm Euro RSCG DSW Partners will be preparing the branding strategy for the State, the purpose of this paper is to provide “ammunition.” The following are facts that make Utah a great place to live and do business. We provide all parts of this paper for educational purposes and as resources for future work.



## STORIES OF EXCELLENCE

A brand is a friend to the customer. A core identity is essential to the brand. This identity is summarized in a small set of words. However, these words cannot be in contradiction with what is being done. If “consumers” find inconsistencies in the actions of a company or in our case a state, the credibility will be lost. Credibility is so crucial for success in the marketing game.

Howard Gardner of Harvard University said, “Stories constitute the single most powerful weapon in the leader’s literary arsenal.” The purpose of this paper is to share stories and facts that show what Utahans have done and the positive things they can accomplish.

*“Stories constitute the single most powerful weapon in the leader’s literary arsenal.”*

*Howard Gardner,  
Harvard University*

The Salt Lake City Chamber of Commerce reports,

“Salt Lake City is recognized on a regular basis as a great place to live and work. The Salt Lake City/Ogden area was ranked as the best place to live in North America in the sixth edition of *Places Rated Almanac*; *Entrepreneur magazine* named the Salt Lake/Ogden area as the second best large city in which to locate a business; Salt Lake City was named one of the top 25 ‘Wired Cities’ in America by *Yahoo! Magazine*; *Fortune magazine* listed Salt Lake third in its rankings of best cities in America for business; *Financial World* rated Utah as the best fiscally-managed state in the nation; *Western Blue Chip Economic Forecast* and *American Demographics magazine* refer to Utah as ‘one of the top three economies in the nation’; *Newsweek* has cited Salt Lake City as the number one city with the best environment for business; *Adweek Magazine* identified the city as ‘poised to become a city of the future’; and *Morgan Quitno Press* named Utah as the fourth most livable state.”<sup>13</sup>

This kind of praise is due to the efforts of everyone who lives in the State of Utah. We know the following stories and facts convey the true greatness of Utah. Some of the facts and figures are specifically about the Salt Lake City metro area, which indicates that Utah’s strengths are centered in its largest metro area.

## **UTAH IS A PLACE OF NEW IDEAS**

Utah is a hotbed of new ideas. Many of these ideas come through the high-tech programs at Utah's three major research universities: Brigham Young University, University of Utah, and Utah State University. Below is a description of some of the ideas that were developed and licensed through these programs. Utah has connections with many notable people, companies, and events. The following stories show that Utah is a place of new ideas.

### **BRIGHAM YOUNG UNIVERSITY**

#### **Companies**

- **Sonic Innovations** – Douglas Chabries, a BYU professor, is one of the developers that helped make Sonic Innovations possible. Sonic Innovations is a company that pioneers miniaturized audio products. The company has developed and patented digital signal processing (DSP) technologies and placed them in the smallest single-chip DSP platform ever installed on a hearing aid, enabling smaller, more comfortable, more reliable and more natural sound producing devices.<sup>14</sup>
- **Caldera, Inc.** Caldera is headquartered in Orem and was founded in 1994 by Ransom Love and Bryan Sparks. Both are graduates of BYU. Ransom holds a bachelor's degree in international relations and an MBA and Bryan holds a bachelor's degree in computer science. Caldera was the first Linux company to create the Linux VAR channel - now the industry leader - with over 15,000 resellers worldwide. "Caldera enables the development, deployment and management of unified Linux and UNIX Internet solutions for business through its award-winning OpenLinux, Open UNIX and OpenServer product lines and services. In 1998, Caldera Systems, Inc. (NASDAQ: CALD) was created to develop Linux-based business solutions. In 2001, Caldera Systems, Inc. acquired the assets of the Server Software Division and Professional Services Division of The Santa Cruz Operation, Inc. (SCO) (NASDAQ: SCOC), forming a new company, Caldera International, Inc."<sup>15</sup>
  - **Lineo Inc.** Lineo is a subsidiary of Caldera Inc. and was founded in 1998 by Bryan Sparks. Lineo is a leader in embedded system software. Since 1998, Lineo has grown from 12 employees to 325 and is a leader in the embedded technology sector. Lineo has been growing through acquisitions and has acquired or intends to acquire key companies in the areas of embedded software, real-time operating systems, high availability solutions and interactive digital TV. Motorola and a joint venture with Samsung, has further established Lineo's place as a leading provider of embedded software solutions in the industry.<sup>16</sup>
- **Cimetrix** – Cimetrix is a software company that specializes in the area of robotics. Cimetrix, Inc. is headquartered in Provo, Utah. The company was founded in 1987 to develop and market open architecture, standards-based software and hardware products for automated manufacturing. The concept of Cimetrix open architecture software was

developed at BYU 15 years ago and tested for 12 years before coming to market in 1995. They are currently a leader in the Japanese economy.

- **Leustatin** – Leustatin is an anti-lymphoid medication discovered at BYU. It is used in the treatment of hairy cell leukemia, low grade lymphomas, Waldenstrom's Macroglobulinemia<sup>17</sup>, and is showing promise as a treatment for multiple sclerosis. Johnson & Johnson markets the drug and has revenues resulting from the sales of the drug of approximately \$35 million. It is also marketed under the generic name Cladribine.<sup>18</sup>
- **Solar Funnel Cooker** – The “solar funnel cooker” was developed by Dr. Steve Jones of BYU and makes it possible to cook a meal as though you had an oven. This cooker has proven effective in tests conducted in Bolivia and elsewhere, for both cooking during the day and cooling at night. Dr. Jones currently has developed a new cooker/cooler design, based on a reflective hemisphere, which is in the process of being tested and compared against the effectiveness of the previous designs.<sup>19</sup> This development is primarily intended to benefit developing countries, to provide alternatives to wood burning and prevent the spread of disease.<sup>20</sup>
- **Moxtek** – Moxtek is an international leader in innovative original equipment manufacturer (OEM) components. Moxtek specializes in components for analytical instruments used in x-ray fluorescence. They also have developed new techniques for doing things in projection television polarizers. The polarizer is placed in front of the LCD screen and enables such things as Palm Pilots to work.<sup>21</sup> The two founders were teachers at BYU, Dr. Larry Knight, and Dr. James Thorne. In an interview with the CEO, Glen Stewart, he disclosed that Moxtek dominates the market place with 65% market share. The company has been experiencing approximately 20% growth the last two years and with new products coming on line they expect 200% growth for the next few years followed by 60% growth thereafter. They are also currently working on closing a loan for \$6 million. The company is currently valued at approximately \$36 million.<sup>22</sup>
- **Wavetronix** – two teachers at BYU, David Arnold and Michael Jensen founded Wavetronix. Wavetronix specializes in the utilization of cost-effective devices and fabrication techniques associated with radio-frequency (RF) technology to address needs in the market segments of transportation management and safety.<sup>23</sup>
- **AJ Design** – David Arnold and Michael Jensen founded AJ Design in 1998. The company creates tools for high-frequency circuit design, which are used for the design and analysis of RF-Boards, RF-ICs, communication systems, and radar systems.<sup>24</sup>
- **Mass Spectrometry technology** – Mass Spectrometry technology was developed at BYU and is licensed to Leco, an analytical instrument company based in Michigan. Mass spectrometry is an analytic technique through which chemical substances are identified by the sorting of gaseous ions in electric and magnetic fields according to their mass-to-charge ratios.<sup>25</sup>

- **Continuing Education Center** – Through Brigham Young University's web based educational facility, online courses and the continuing education program, BYU boasts an amazing 56,000 students making it the largest web based educational facility in the nation, perhaps the world. Due to the Church of Jesus Christ of Latter-day Saints latest initiative the perpetual education fund, this number will increase dramatically as the program becomes deployed. Currently students must complete 30 hours of their education on-campus for a degree. BYU hopes to soon become accredited to offer a complete degree. While the degrees are limited BYU also hopes to expand the degrees offered as well.<sup>26</sup>
- **Software** – BYU has a newly developed computer instructional design facility, which will aid in the development of future software. Some of the software that has been released, before this facility opened, for which BYU is renown are Organ tutor program, Chemlab tutor, and Computer Adaptive Placement Exam (CAPE). CAPE is a leading software placement exam used by universities for placing students in their appropriate skill level for language studies. BYU currently licenses CAPE out to 270 universities on a per usage basis.<sup>27</sup>
- **Zygote Media Group, Inc.** – Zygote was founded in 1994. They are a Utah-based company that provides 3D computer data (models and texture maps) for commercial use in modeling, rendering, and animation software. They have worked on high-profile projects such as The Fifth Element, Lake Placid, Godzilla, Fight Club, Mumford, Hollow Man, and Dennis The Menace 2. They have also worked on commercials for Coke Cola, Kool Aid, and Jeep, as well as gaming software images.<sup>28</sup>
- **Environmental Modeling Systems, Inc.** – Founded by three BYU professors they specialize in software for water resource modeling. Groundwater Modeling System (GMS), Surface-water Modeling System (SMS), and Watershed Modeling System (WMS) are all software products that were developed at the Environmental Modeling Research Laboratory (EMRL) at Brigham Young University. These software programs provide user-friendly, graphical user interfaces for industry-standard numerical models in groundwater, surface-water, and watershed modeling applications.<sup>29</sup>
- **Novell** – Novell Data Systems Incorporated, founded by BYU students in 1979, began life as a manufacturer of hardware used for networking. In 1983 Ray Noorda and Safeguard Scientific, a venture capital firm, reincorporated NDSI as Novell Inc. This is when Novell began its life as a software manufacturer for network systems.
  - “Novell Data Systems began life in 1979 as a computer manufacturer and maker of disk operating systems. In January 1983, Raymond J. Noorda and Safeguard Scientific, a venture capital firm, reincorporated NDSI as Novell, Inc. to design and market software and hardware used for data networks. Noorda, an experienced engineer and marketer became president, chief executive officer, and ultimately chairman of the board of the new company.

Under Noorda, Novell helped found the corporate network market with the introduction of the LAN. In 1983, Novell introduced NetWare, the first LAN software based on file-server technology. Novell developed a PC networking system that designated one machine to manage the network and control access to shared devices, such as disk drives and printers. This marked an important early step in the network revolution that has culminated today in the one Net economy.

Through the 1980s, corporate requirements for networks grew significantly, with LANs being increasingly replaced by Wide Area Networks (WANs), which unified large corporate environments. By the early 1990s, Novell's NetWare operating system, updated to add key features for distributed enterprises, led this market with nearly a 70 percent share.<sup>30</sup>

- **Volera** -- Volera spun-off of Novell in February of 2001. Volera provides solutions for Internet acceleration and content networking to Internet service providers, Internet data centers and server appliance manufacturers. These solutions focus on the fast growing caching and content distribution market, estimated at 10.4 Billion USD by 2004. Volera's services dramatically transform today's Web into a fast, flexible and dependable business tool by enabling Web on ramps and off ramps to accelerate data flow and inject unprecedented control over the delivery of critical content, media and applications.<sup>31</sup> Volera is currently experiencing problems. Although the caching industry is expected to be large Volera is at the present time not fairing so well.<sup>32</sup>
- **WordPerfect (SSI)** – In 1984, Alan Ashton, a BYU professor, and Bruce Bastian, a master's student, founded Satellite Software International. Their first product soon became world renown as Word Perfect, a powerful new word processor for the IBM PC. This word processing software went on to become the number one word processing software by the early 1990's. Soon thereafter it fell to become what it is today.<sup>33</sup>
- **EmergeCore Networks** – Steven Clegg founded EmergeCore in October of 2000. EmergeCore has pioneered a desktop system that will allow companies to do their own Web hosting.
- **MyComputer.com** – BYU students, Josh James and John Pestana, founded MyComputer.com in 1996. MyComputer.com today is the leading application service provider of Web analytics.<sup>34</sup> In November of 2000 NetObjects acquired MyComputer.com for \$57 million.<sup>35</sup>
- **WhizBang! Labs'** – Founded in 1999 by BYU professors Dallan Quass and Berkeley Geddes, along with Berkeley's former boss at Times Mirror, Bob Sherwin. WhizBang! Labs' is the leading provider of information extraction technology and services. The company developed a groundbreaking software technology that completely automated the finding, summarizing, extracting, and linking application-specific data.<sup>36</sup>

- **FlipDog.com** – FlipDog.com was founded in 2000 by BYU professors, Dallan Quass and Berkeley Geddes. Before being acquired from WhizBang! Labs' by Monster.com on May 25, 2001, FlipDog.com was the largest online commercial job site, with over 650,000 jobs from more than 53,000 employers, and was ranked by PC Magazine as one of the Top 100 Web Sites in the world (4/23/00 and 12/5/00). FlipDog.com was also ranked as the fifth most-visited online recruiting site, according to Media Metrix statistics.<sup>37</sup> FlipDog.com is powered by technology developed at WhizBang! Labs(tm) enabling FlipDog.com to find and post current job postings revolutionizing the online job site industry. This technology automatically finds, summarizes, extracts, and links to data from an unlimited number of Web sites.<sup>38</sup>
- **I-Link Inc.** – Founded in 1994, I-Link Inc. is an enhanced voice and data communications company that uses Internet protocol (IP) telephony and its own private network to provide low-cost long-distance, conference calling, voice mail, fax, e-mail and other communications services. I-Link's products and services are primarily offered through a network-marketing channel. Through wholly owned subsidiaries MiBridge Inc. and ViaNet Technologies Ltd., I-Link develops emerging communications technologies that are used by I-Link and other leading communications firms worldwide. I-Link is headquartered in Draper, Utah.<sup>39</sup>
- **1-800 CONTACTS** – 1800Contacts is the world's largest direct marketer of contact lenses, founded in 1995 by Johnathan Coon, a BYU MBA student, and John Nichols. The company had their first start as a mail order company in 1991. They are currently the national leader in contact sales growing from revenues of a half a million in 1995 to approximately 145 million in 2000.<sup>40</sup>
- **iServer.com** – Founded in 1995 by PhD. students at BYU. Verio acquired iServer in December of 1997, which was acquired by NTT of Japan in 2000. Prior to iServer becoming acquired they were among the top five Internet hosting companies in the world and were most well known for their virtual server technology.<sup>41</sup>
- **US Synthetic** – US Synthetic is the world's leading supplier of Polycrystalline Diamond Cutters (PDC) to the oil-drilling industry. The company was formed in 1978 by its current Chief Executive Officer, Louis Pope, who was joined shortly thereafter by his father, current Chairman, Dr. Bill Pope. US Synthetic was originally formed to produce synthetic diamond powder (or grit).<sup>42</sup>
- **PerfectPractice M.D.** Amy Lewis founded Medical Software Systems; dba PerfectPractice.MD in 1996. Medical Software Solutions into a leading distributor of HBOC's practice management software with over 1000 clients. PerfectPractice M.D. is the only completely web-based practice management system. The system allows support of multiple sites across the web making it possible for physicians and key personnel to access data from any location with Internet access. Amy attended Brigham Young University majoring in communications and public relations.<sup>43</sup>

- **iLumin Inc.** iLumin was founded in Orem, Utah in 1996 by Brent Israelsen, a BYU graduate. iLumin is in the digital signature business. The company creates a secure virtual signing room and allows multiple parties to enter to ink deals with digital certificates or other devices that verify signers' identities. iLumin then files the document for later access by approved parties and collects filing fees. The company recently raised \$20 million in its third round of venture capital funding from DB Capital Partners and ABS Ventures, affiliates of Deutsche Bank AG, and funding from Rock Creek Capital.<sup>44</sup>

## Developing Technologies

- **Poket Doktor** – is a developing technology that allows individual specific medical information to be downloaded by medical personnel through a card carried by the individual. On June 24 of this year this device took 3<sup>rd</sup> place out of 250 entries in the IEEE Computer Society International Design Competition.<sup>45</sup>

## Alumni

- **Paul D. Boyer, B.S.** – Paul Boyer was born on July 31, 1918 in Provo, Utah. He attended Brigham Young University graduating with a BS degree in chemistry in 1939. From there he went on to graduate school receiving his Masters and Ph.D degrees. In 1997 Paul along with John Walker received the Nobel Prize in Chemistry for their elucidation of the enzymatic mechanism underlying the synthesis of adenosine triphosphate (ATP).<sup>46</sup>
- **Harvey Fletcher, B.S., Chairman of the Physics Department** – Harvey Fletcher was a prominent physicist, renowned as the Father of stereophonic sound, credited with inventing the hearing aid and the first audiometer, Director of Research at Bell Laboratories, and Founding Dean of the College of Engineering at Brigham Young University.<sup>47</sup> Harvey was born in Provo, Utah, on September 11, 1884. He attended Brigham Young University graduating in 1907. He furthered his education obtaining his Ph.D. at the University of Chicago where he was the graduate student whose dissertation research was the oil drop experiment to measure the charge on an electron, under the direction of Robert Millikan. This research contributed greatly to the field of electronics, which led to the development of the radio and television industry. Following his Ph.D. degree Harvey returned to BYU to found the College of Engineering. He left BYU five years later to accept an offer at Western Electric Company in New York. Here he was assigned to do research in sound and eventually he was appointed Director of all Physical Research at Bell Telephone Laboratories.<sup>48</sup>
- **Steve Jenkins B.S., MBA** - Jenkins is President and CEO of Jenesys.com, which he founded in 1994 while completing his MBA at BYU. Jenesys is an Internet media company that creates and manages content-based Web sites, including the popular WinFiles.com (formerly Windows95.com) Web site. Jenkins sold the WinFiles.com site

in February 1999 to CNET, Inc. In 1996, Jenkins co-founded and served as CEO and Chairman of VServers.com, a Web hosting and e-commerce tools company, which sold in December 1999 to Micron Electronics. Jenkins presently serves as CEO of CheatCodes.com, a video game content Web site.<sup>49</sup>

- **Dallan Quass, Computer Science Faculty** – Dallan Quass left BYU in 1999 to found WhizBang! Labs'. Dallan developed the technology making it possible to automatically browse and extract data from web pages without having to write specific software for each site.
- **Berkeley Geddes, B.S., Computer Science Faculty** – Berkeley left BYU with Dallan Quass to start their company WhizBang! Labs'. FlipDog was a spin-off from WhizBang! Labs'.
- **Greg Porter** – Porter a BYU alumni founded PowerSchool in 1997. PowerSchool Enterprise, the leading provider of web-based student information to K-12 schools,<sup>50</sup> is designed for large school districts, giving them the ability to easily and cost-effectively manage student records and allowing parents to track their children's progress in real-time – all from a centralized server. The first school to implement this program was located in Salt Lake City.<sup>51</sup> Greg also co-founded iShopper, which he sold.
- **Jeff Smith** – In 1991, Jeff founded Smith and Associates, a sales and marketing incubation firm, dedicated to establishing distribution and managing the sales and marketing functions for IT manufacturing companies. He recently founded Cerberian, an Internet company that provides Internet Access Management solutions that help businesses improve productivity, free up bandwidth, and control Internet access.<sup>52</sup>
- **Mike Morgan, B.S.** – In 1987, Mike founded StarTek Inc. (NYSE:SRT), an outsource provider, in Greeley, Colorado. Mike, CEO of StarTek until June of this year, took the company from a startup to a leading international provider of process management services primarily for Fortune 500 companies. StarTek's offers services including e-commerce support, Internet support, high-end technical support, logistics management, distribution, order processing, inventory management, vendor selection and management, product assembly, warranty return management, fulfillment, customer support, and telecommunications process management. StarTek customers consist of leading companies in computer hardware and software, including Microsoft, Hewlett Packard, and Canon. On May 29, 2000 Business Week listed StarTek in the top 100 fastest growing companies in the United States.<sup>53</sup>
- **Timothy Olson, B.S., MBA** – Timothy Olson graduated from Brigham Young University. He co-founded Webmiles with Jeff Crapo.<sup>54</sup>
- **Jeff Crapo, B.S., MAcc** – Jeff Crapo graduated from Brigham Young University and partnered with Timothy Olson to found Webmiles.<sup>55</sup>

- **Richard King, B.S.** – Richard King, the former Novell Executive Vice President responsible for the development and marketing of NetWare, founded Big Planet in 1998. As a Cisco Powered Network, Big Planet is rated among the top 1% of Internet service providers worldwide for performance, reliability, and data security. In July of 1999, NuSkin Enterprises acquired Big Planet for 37 million.<sup>56</sup>
- **Kyle Powell, B.S; Drew Major, B.S.; Dale Neibaur, Masters C.S.** – Kyle co-founded a software design and consulting firm, along with Drew Major, and Dale Neibaur. Together these three, know as the SuperSet co-invented the Netware software that made Novell so successful.<sup>57</sup> This was the first PC LAN invented.
- **Steven Clegg, B.S. 1988, MBA 1990** – Steven Clegg founded Beacon Strategies, an Internet and telecommunications consulting company, whose clients include 3Com, Ascend Communications, and Lucent. Steven co-founded EmergeCore Networks in October 2000 has served as the President and CEO of the company since that time.<sup>58</sup>
- **Blake Roney, B.S.; Steven Lund, B.A., J.D.; Sandie Tillotson, B.S., Brooke Roney; Nedra Roney Wentland** – Together these five individuals founded what is known today as NuSkin Enterprises. In 1984 NuSkin was founded as a direct selling cosmetics company. Today it is one of the largest direct sales companies in the world.
- **Myron Mosbarger, M.Ed** – In 1995, Myron along with Jack Thomasson founded Helius. Helius is the leader in the satellite IP solutions software arena and has been a leader since its inception in 1995. Helius introduced the first satellite router, produced a series of subsequent routers and developed the Virtual Technician (SM) service to remotely support these routers in locations throughout the world.<sup>59</sup>
- **Travis Hill** – Travis Hill dropped out of Brigham Young University to focus his talents on developing software. Travis developed a program called Universal Messenger, a messaging program that is a cross between a chat line and e-mail, that allows the user see if one of their contacts or friends is online. The program works with ICQ, Yahoo, AOL and Microsoft.<sup>60</sup> Travis is now President of the newly formed software company Media Enforcer. Media Enforcer develops software that allows users to track the sharing of copyrighted material on Napster's server.<sup>61</sup>
- **Ted Nelson, B.S. 1971** – Ted Nelson graduated from Brigham Young University with a B.S. in Accounting in 1971. He later went on to co-found Care Enterprises, a national nursing-home chain, in 1973. In 1978 he founded and built Winn Enterprises, a holding company that acquired Knudsen Dairies among others. In the late 1980's, Ted partnered in development of Peralta Hills East residential project in Anaheim. Following these projects Ted acquired Procuts in 1991 and founded Opal Concepts, a holding company, in 1992, the second largest salon company in the nation and the largest private salon company in the nation.<sup>62</sup>
- **Mark Hurst, B.S.** -- Mark Hurst graduated from Brigham Young University with a B.S. in computer science. After graduation Mark worked at WordPerfect where he designed

and implemented an advanced text editor that contributed to the evolution of WordPerfect. In the 1980's he joined the "Superset" to work for Novell designing device drivers and administration utilities for NetWare. While at Novell, Mark invented and pioneered advanced user-interface designs leading to successful spin-off companies. He also co-implemented the IPX network protocol. Mark Hurst's last project, the founding of Edgix, was closed due to lack of business. Before Edgix, "Mark was the Vice President of Development and a Board Member of Aspen Research Group, Ltd., a company that develops real-time technical analysis solutions for the securities and financial industry. As a lead engineer, he oversaw the development of high-performance client/server architectures and network transport protocols for use in maintaining real-time synchronization of distributed information caches."<sup>63</sup>

## UNIVERSITY OF UTAH

### Companies

- **Evans & Sutherland** – Founded in 1968 by two University of Utah professors, David Evans and Ivan Sutherland, Evans & Sutherland is one of the premier computer graphics companies in the world. The company remains a dominant presence in simulation and training systems for the most advanced applications imaginable, while leading the way in creating new markets and applications for 3D graphics, visualization, simulation, and virtual reality.<sup>64</sup>
- **The Internet** – The University of Utah was one of the first four universities (Stanford, UCLA, UC Santa Barbara and the University of Utah) to take part in what was the precursor to the Internet, ARPANET. In 1969 ARPANET, a large wide-area network created by the United States Defense Advanced Research Project Agency, was used as a means to test new networking technologies linking many universities and research centers.<sup>65</sup>
- **TheraTech (now Watson Pharmaceuticals)** – Founded by Dr. Dinesh Patel, “A world leader in drug delivery technology TheraTech, Inc. was founded in 1985. A public company since 1992, TheraTech, Inc. (NASDAQ: THRT) has established itself as a world-class developer and manufacturer of innovative drug delivery products and technologies. TheraTech's innovative drug delivery development successes include: a variety of transdermal patches; oral transmucosal (OTM) products for the delivery of peptides and small-molecule drugs requiring rapid onset (i.e. pain medications); oral controlled release systems; pulmonary technologies for local and systemic drug administration; and topical preparations. TheraTech's most recent advancements are in cell-targeted drug delivery, a revolutionary technology that delivers medications such as anti-cancer and anti-inflammatory drugs directly to specifically targeted diseased cells.”<sup>66</sup>
- **Myriad Genetics** – founded in 1991 by Dr. Skolnick along with Dr. Walter Gilbert, a Nobel Laureate, and Peter Meldrum, past-president and CEO of Agridyne, an agricultural biotechnology company, which was the successor of Native Plants, Inc., also a Research

Park enterprise. The company has discovered the BRCA1 and BRCA2 breast and ovarian cancer genes, the MMAC1 brain cancer and the MMS1 cancer genes, as well as the CHD1 heart disease and dozens of cell-cycle control and disease pathway genes.<sup>67</sup>

- **ARUP** – Associated Regional and University Pathologists, Inc. “was formed in 1984 by the Department of Pathology at the University of Utah Health Sciences Center, with a market focus to perform specialized testing not generally available in local communities. Its clients include group purchasing organizations, regional hospital networks, individual hospitals, reference laboratories, university hospitals, and government institutions. Its vision is “to be the reference laboratory of choice for community health care systems, as the most responsive source of quality information and knowledge.” Most significantly, ARUP exists to support the academic mission of the Department of Pathology and to provide superior service to the patients of University Hospital.”<sup>68</sup>
- **Sarcos** – Founded by Steve Jacobsen in 1983, Sarcos was originally established to develop projects in collaboration with the Center for Engineering at the University of Utah. Today the company is involved in many fields including the development of silicon-based Microsystems, programmable drug-delivery Microsystems, mixed-media entertainment systems, less-invasive medical Microsystems, interactive telecommunications systems, human/computer interfaces, and tele-robots for remote physical presence.<sup>69</sup> Some of the noteworthy projects include building undersea robots with the ability to go 20,000 feet under the sea, King Kong and Jurassic Park dinosaurs for Disney, a robot for Ford Motor Company, a insulin delivery pump the size of a postage stamp, and robotic birds for Larry Miller’s Mayan restaurant. They are also working on a contract with Boeing to develop sensors in aircraft that eliminates black boxes through uplinks to satellites.<sup>70</sup>
  - The company has spun off Iomed Inc. in 1975; Sarcos Research Corp. in 1987; Microject Corp. in 1991; Sarcos Entertainment Corp. in 1996; Precision Vascular Systems Inc. in 1997; Intelligent Microinfusion Systems in 1999; and Sarcos Microsensors Inc. in 1999.<sup>71</sup>
- **Iomed** – Part of a research project conducted by the University of Utah. Steve Jacobsen was part of this project.<sup>72</sup> The company specializes in the development, manufacturing, and commercialization of controllable drug delivery systems using iontophoretic technology. This proprietary technology in drug delivery systems is a non-invasive method of enhancing and controlling the transport of water-soluble ionic drugs into and through the skin using a low-level electrical current.<sup>73</sup>

## Alumni

- **Ray Noorda, BS 1949** – In 1983, Ray Noorda changed the direction of NDSI, a network hardware company, into what is known today as Novell, Inc., a network software company. NDSI was founded into Novell through Ray’s efforts and the venture capital firm, Safeguard Scientific. Ray didn’t exactly invent computer networking -- the connecting together of separate personal computers so they can work together -- but he

certainly was the one who promoted the concept within the computer industry when few others were believers.<sup>74</sup>

- **J. Willard Marriott, B.S. 1926** – J. Willard Marriott (Bill) graduated from the University of Utah in 1926. Following his graduation Bill went on to found numerous companies the most well know being the hotel chain, Marriott International.
- **Professors Jack Keuffel, Physics Faculty 1959-1974; Eugene Loh Physics Faculty 1975-present; George Cassiday Physics Faculty 1970-present; Pierre Sokolsky 1981-present** – During the 1970s, they developed the atmospheric fluorescence technique for observing cosmic ray tracks in the earth's atmosphere and made the first observation of an extended cosmic ray track in the sky.<sup>75</sup>
- **Grant Fowles B.S. 1941, Physics Faculty; William Bennett, Physics Faculty** – Grant Fowles and William Bennett, in 1954, discovered what was at the time the second known visible light laser, which used sulfur vapor. Previously the only known vapor laser was the Bell Laboratory Helium/Neon laser. This group of U of U professors went on to develop metal vapor lasers, as well.<sup>76</sup>
- **Fritz Luty, Physics Faculty 1965-1998 and Yi-Hong Yang Ph.D. 1984 Teaching Fellow 1980-Limited Instructor 1986** – In 1983 Fritz and Yi-Hong discovered the energy transfer in ionic crystals between photo-excited electronic defects and molecular defects. As a result of this research the first successful vibrational solid-state laser was developed.<sup>77</sup>
- **Z. Valy Vardeny, Physics Faculty 1987-present; Sergey Frolov, Ph.D. 1996; and Werner Gellermann, Ph.D. 1981, Physics Faculty 1984-present** – In 1996 this group of individuals, lead by Z. Valy, discovered the first organic polymer laser, opening a whole new class of laser materials.<sup>78</sup>
- **Orest Symko, Physics Faculty 1970-present, De-Juan Zheng Ph.D. 1988, Thierry Klein, Research Associate Professor 1992-1994** – Orest Symko along with his group of researchers developed and patented a miniature thermo acoustic refrigerator that promises considerable energy saving benefits. It uses sound as a source of power.<sup>79</sup>
- **Stephen Jacobsen, B.S. 1967, M.S. 1970, Mechanical Engineering Faculty 1973-present** – Stephen Jacobsen is the Director of the Center for Engineering Design (CED). Stephen has developed many devices, which include the following: Utah Artificial Arm, Utah/MIT Dexterous Hand, Anthropomorphic Robots for Entertainment Facilities, Dexterous Tele-Robotic Arm & Hand, Devices for use in Medical Imaging Systems, The Wearable Artificial Kidney, Micro Electro Mechanical Systems (MEMS)-Sensors & Actuators, Micro Drug Delivery Systems & Medical Electronic Monitors, Hydrophones and Pressure & Flow Sensors.<sup>80</sup>
- **Willem Kolff, Director of the Institute for Biomedical Engineering, Professor of Surgery in the medical school and research professor in the engineering school:**

Willem Kolff, the father of artificial organs, was born on 14 February 1911 in Leyden, Holland. He immigrated to the United States in 1950. In 1967 he was recruited to the University of Utah. From his efforts came some of the University of Utah's best-known research efforts, including the first practical artificial heart, the Jarvik-7, as well as artificial ears, eyes, kidneys, and limbs. He was inducted into the Inventors' Hall of Fame in 1985, and in 1990 was named by Life Magazine in its list of the 100 Most Important Americans of the 20th Century.<sup>81</sup>

- **Mario Capecchi, Human Genetics Faculty 1973-present** – Mario Capecchi along with a group of researchers invented a technique for targeting mutation of mammalian genes, using the mouse as a model organism. The targeting of genes has enabled researchers to create mice with defects in a gene of interest and then study the functional consequences of their gene disruption.<sup>82</sup>
- **Henry Eyring, Chemistry Faculty 1946-1948, Dean of Graduate School 1948-1977** – Henry Eyring was recruited to the University of Utah and was the University's first dean of their graduate school. Henry is most well known for his development and application of the absolute rate theory for chemical reactions. Eyring's absolute rate theory proved to be an essential foundation to understanding all chemical reactions. His work proved so significant that he won numerous awards for it, including the National Medal of Science. He was a one out of 75 chemists in 1998 that had been recognized by the American Chemical Society for their contributions to the development of chemistry in the 20<sup>th</sup> Century.<sup>83</sup>
- **Calvin Giddings, Ph.D. 1954, Chemistry Faculty 1957-1996** – Calvin Giddings developed chromatographic techniques, collectively referred to as field flow fractionation for separating complex mixtures. Chemists can apply Calvin's techniques to almost every separation problem they encounter, such as determining the type of pollutants in air and water samples and identifying proteins in a given sample.<sup>84</sup>
- **Wilbert (Bill) Gore, B.S. 1933, M.S. 1935** – Wilbert Gore, a Salt Lake City native, discovered arguably the most well known all-weather fabric, Gore-Tex. Gore-Tex is widely used in the parkas and coats on the backs of skiers during the winter.<sup>85</sup>
- **Evelyn Wood, B.A. 1929 M.A. 1947** – While a graduate student at the University of Utah, Evelyn developed what is probably the most famous speed-reading course in the world, Evelyn Wood Reading Dynamics.<sup>86</sup>
- **Melvin A. Cook, B.A. 1933, M.A. 1934, Mines and Earth Sciences Faculty 1949-1967** – Melvin Cook revolutionized the explosives technology industry through the development of slurry explosives. Slurry explosives were used widely in the mining and construction industries worldwide. Slurry explosives were advantageous in comparison to previous explosive technology in that they could be safely handled in large amounts, are low in cost, and can move immense tonnages of rocks. Through the development of slurry explosives mining and other industries dependent upon explosives became more cost-effective.

- **Antoine Gaudin.** He was the first to develop froth flotation, a method of mineral separation that uses small bubbles of air to which the ore minerals attach and rise to the surface of a concentrator filled with an aqueous solution. Waste materials are separated from valuable metals, such as copper. The technology is widely used today.
- **John Warnock, Ph.D. 1969** – In 1982, Warnock partnered with Dr. Charles Geschke, to found Adobe Systems Inc. with the goal of developing applications for their PostScript page description language. With the release of Acrobat, and through acquisitions, Adobe has grown from being the world's largest desktop-graphics software company, to being the industry's third largest software producer. In 2000 revenues for Adobe were in excess of \$1 billion.<sup>87</sup>
  - John Warnock also worked on the Illiac 4 Project, a NASA space flight simulator, airplane simulators at Evans & Sutherland, and developed the Warnock recursive subdivision algorithm for hidden surface elimination.<sup>88</sup>
- **Alan Ashton, Ph.D. 1970** – In 1979, while a professor at BYU, Alan Ashton founded, along with Bruce Bastian, what is now known as WordPerfect (See BYU). WordPerfect went from a startup word processing company to the leading office suite software producer before Novell acquired it in 1994.<sup>89</sup>
- **Alan Kay Ph.D. 1969** – Alan Kay, the father of the personal computer, contributed to the development of the Ethernet and laser printing, was one of the developers of Smalltalk programming language, developed the Macintosh user interface including overlapping windows, pull-down menus, and the use of icons--now also found in scores of computer programs. In 1994 he became a fellow at Apple Computer.<sup>90</sup>
- **Jim Clark, Ph.D. 1974** – In Jim Clark's pursuit to make 3D graphics as realistic as possible, he founded Silicon Graphics in 1981. Dr. Clark developed the initial technology to do this, "Geometry Engine", and patented it in 1981.<sup>91</sup> In 1994, Dr. Clark left Silicon Graphics to found Netscape, the first widely used web browser. He later went on to found Healthon in 1996 and myCFO.com in 1997.<sup>92</sup>
- **David Evans, Computer Science Faculty 1965-1980** – The University of Utah recruited David Evans in 1965 to found their computer science department. Together with Ivan Sutherland, a professor recruited by David Evans to the University of Utah, he co-founded Evans & Sutherland in 1968. Evans and Sutherland went on to become one of the premier computer graphics companies in the world (see U of U).<sup>93</sup>
- **Ivan Sutherland, Computer Science Faculty 1968-1974** – In 1967 David Evans recruited Ivan Sutherland to the University of Utah's computer science department. In 1968 together with his colleague, David Evans, Ivan co-founded the firm Evans & Sutherland, one of the premier computer graphics companies in the world. In 1975, Ivan Sutherland left Evans & Sutherland to pursue other interests.

- Before coming to the University of Utah he invented the first graphical user interface programs, Sketchpad.<sup>94</sup> He is a fellow at Sun Microsystems and has received numerous awards for his contributions to computer graphics. These awards include ACM Turing Award in 1988 and John von Neumann Medal in 1998. He was also the first recipient of the ACM SIGGRAPH Coons Award.<sup>95</sup>
- **Robert Barton, Computer Science Faculty 1968-1973** – Robert Barton invented the first stack machine architecture, was the principal architect of all Burroughs computers, and was the co-inventor of dataflow.<sup>96</sup>
- **Chuck Seitz, Computer Science Faculty 1970-1973** – Chuck Seitz, a pioneer in asynchronous circuits, joined the University of Utah as a professor in 1970. During his years as a professor at the University of Utah he worked for Evans and Sutherland and co-designed the first graphics machine, LDS-1 (Line Drawing System). He left the University of Utah in 1973 to pursue other interests. Some of his other noteworthy accomplishments include the design of the Cosmic Cube machine, a research prototype that led to the design of the Intel iPSC and founder of Myricom.<sup>97</sup>
- **Ronald Resch, Computer Science Faculty 1970-1979** – Ronald Resch is a pioneer in the field of computer art. Ronald is most well known in the computer field for building the first physical structure designed entirely with computer-aided geometric modeling software: a large Easter egg located in “The Easter Egg Capitol of the World”, Vegreville, Alberta, Canada. Ronald also has designed and modeled using computers, major art exhibits placed in national galleries.<sup>98</sup>
- **Tony Hearn, Computer Science Faculty 1971-1981** – Following the departure of David Evans, Tony Hearn took over as the chairman of the computer science department at University of Utah in 1973. Tony developed the one of the first algebraic mathematics packages (REDUCE). REDUCE is still in use today.
- **Duane Call, Ph.D. 1971** – Former faculty at Brigham Young University, Duane left BYU, along with Richard Ohran to found Computer Systems Architects in 1980. In 1990 these two founded the company Vinca Corp. Dr. Call and Dr. Ohran serve in strategic roles as Vivca.<sup>99</sup> Duane also designed the FPS-120 Supercomputer, specializing in vector calculations.<sup>100</sup>
- **Tom Stockham, Computer Science Faculty 1969-1981** – Pioneered the digital audio processing and created the field of digital recording resulting in the digital technology that made possible the CD and CD-ROM. In 1975, Tom Stockham founded Soundstream Inc., the first commercial digital recording company in the United States. Due to his expertise, Tom Stockham was selected as one of six experts to determine whether someone had deliberately erased Nixon’s White House tapes in the Watergate scandal. He was the first recipient of the Technical Grammy Award from the National Academy of Recording Arts & Sciences in 1993. He was also received an Emmy Award from the National Academy of Television Arts & Sciences in 1988.<sup>101</sup>

- **Henri Gouraud, Ph.D. 1971** – Developed the Gouraud shading method for polygon smoothing, adding the appearance of a curved surface. In the past only flat shading had been possible. With the Gouraud method of shading the rendering quality significantly increased with hardly an increase in the amount of computations.<sup>102</sup>
- **Elliott Organick, Computer Science Faculty 1973-1985** – Elliott Organick passed away in 1985, but before doing so he founded SIGSCE (ACM Special Interest Group on Computer Science Education), won the SIGSCE award in March of 1985, and authored several widely used computer science textbooks (A FORTRAN Primer (later revised as FORTRAN IV), Computer Science: A First Course, and Programming Language Structures).<sup>103</sup>
- **Bui Tuong-Phong, Ph.D. 1975** – Invented the Phong shading method, a rendering scheme that creates a highlight on the object to simulate a light source. Phong's shading method is still one of the most widely used methods for illumination in computer graphics.<sup>104</sup>
- **Henry Fuchs, Ph.D. 1975** – Henry Fuchs is currently Federico Gil Professor of Computer Science, Adjunct Professor of Biomedical Engineering and Adjunct Professor of Radiation Oncology at the University of North Carolina at Chapel Hill.<sup>105</sup> Henry founded Pixel Planes, a heterogeneous multiprocessor graphics system using processor-enhanced memories and ran by a research group dedicated to building graphics engines with an emphasis on scalability and real-time rendering.<sup>106</sup> Henry also conducts research on 3D medical imaging and head-mounted display and virtual environments.<sup>107</sup>
- **Martin Newell, Ph.D. 1975, Computer Science Faculty 1977-1979** – After finishing his Ph.D. at the University of Utah, Martin Newell stayed on for two years as a professor. He is well known for the development of procedural modeling for object rendering and the co-development of the Painter's algorithm for surface rendering. In 1988, Martin founded Ashlar, a company that specializes in the development of computer-assisted design software.<sup>108</sup>
- **Frank Crow, Ph.D. 1975** – During his Ph.D. work at the University of Utah, Frank Crow developed anti-aliasing methods for edge smoothing. Following his Ph.D. Frank left to teach at the University of Texas at Austin and from there he went to Ohio State University.<sup>109</sup>
- **Martin Griss, Computer Science Faculty 1977-1983** – During his Ph.D. work Martin Griss worked with Tony Hearn at the University of Utah on the standardization of LISP. This led to his development of Portable Standard LISP (PSL). Martin is currently the Principal Laboratory Scientist at HP Labs in Palo Alto, CA.<sup>110</sup>
- **James Blinn, Ph.D. 1978** – James Blinn invented the first method for texture mapping, the representation of surface textures in graphical images and light refraction on curved surfaces. While a scientist at JPL he worked on computer animation of planetary fly-bys. James produced a PBS series *The Mechanical Universe*, which used animation to teach

the principles of physics and mathematics. James also, in collaboration with Tom Apostle, produced an educational video series about mathematics, *Project Mathematics!*.<sup>111</sup>

- **Jim Kajiya, Ph.D. 1979** – Jim Kajiya developed "the frame buffer concept for storing and displaying single-raster images."<sup>112</sup> Jim is considered to be one of the greatest luminaries in the history of computer graphics.<sup>113</sup>
- **Robert Johnson, Computer Science Faculty 1987-1993** – An emeritus professor of the University of Utah, Robert Johnson invented the magnetic ink printing technology used on virtually every check we write, the Johnson counter logic circuit. Before joining the University of Utah, Robert Johnson founded two successful technology companies, Ovonic Imaging Systems and Mosaic Systems, Inc. He is also a former Vice President of Engineering for Burroughs.<sup>114</sup>
- **William (Tracy) Hall, Ph.D 1948** – In 1954 while at GE, Tracy Hall successfully synthesized diamond with a device he developed called the "belt" apparatus. In 1955, Tracy left GE to become a professor at BYU in Chemistry and Director of Research. Due to the government secrecy order Dr. Hall was forced to design a completely new machine to achieve the conditions necessary to synthesize diamonds. In 1966, Dr. Hall and two other university professors left BYU to found Megadiamond specializing in the manufacturing of diamonds and high-pressure equipment. Almost all diamond-synthesizing machines used today are based on one of the designs Dr. Hall invented.<sup>115</sup>
- **Edwin E. Catmull Ph.D. 1974** – The inventor of "texture mapping," the "Z-buffer" and the rendering software, RenderMan, Edwin Catmull is the President and co-founder of Pixar.<sup>116</sup> His other achievements include an Academy Award in 1995 for Scientific and Technical Engineering, and the Coons Award, the highest achievement in computer graphics.<sup>117</sup>
- **Suhas Patil, Computer Science Faculty 1977-1981** – In 1981, Suhas left the University of Utah to found CIRRUS Logic, originally known as Patil Systems Inc., an Internet tools and solutions provider. Cirrus Logic is the worldwide market leader in audio chips. Suhas "developed the first Net-based circuit synthesis system for asynchronous circuit design."<sup>118</sup>
- **Nolan Bushnell, B.S. Engineering** – Nolan Bushnell founded Atari in 1972 with an initial investment of \$500. Atari soon went on to become one of the fastest-growing companies attaining sales in excess of \$500 million in 1980. Bushnell sold Atari to Warner Communications in 1976. In 1978, he founded Chuck E. Cheese Pizza Time Theater, which went public in 1981.<sup>119</sup> Nolan is currently in the process of managing two of his new startups uWink, a dotcom video arcade network, and E2000, a virtual interactive theater.<sup>120</sup>
- **David Howard, MFA** – David Howard was born in Utah and received a Masters degree from the University of Utah in playwriting. He is the writer of "Galaxy Quest", starring

Sigourney Weaver and Tim Allen. *Galaxy Quest* won the 2000 Hugo award for best film and the 2000 Nebula award for best script.<sup>121</sup>

## Developing Technologies –

- **Advanced Construction Materials** develops new construction materials and innovative techniques for inspecting the condition of constructed facilities. The center has three core technology areas: (1) proprietary tire-added latex concrete (TALC) technology; (2) proprietary automated facility management systems (AFMS); and (3) new construction product testing and evaluation services. The center's TALC process provides superior performance compared with existing tire concrete processes. The AFMS is composed of two modules: PicCrack and MapCrack. PicCrack takes digitized pictures of pavement cracks and computes a unified crack index using a proprietary image processing algorithm at significantly lower costs and greater accuracy than manual systems currently available. MapCrack selects the most appropriate maintenance strategies and provides present costs and long-term budget estimates for maintenance programs. The center also serves as an independent testing and evaluation center for a number of new construction materials.
- **Asynchronous Circuit and System Design** facilitates the integration of systematic asynchronous and self-timed computer-assisted digital circuit techniques into commercial practice by extending the center's existing research based computer-aided design (CAD) tools into viable commercial products. While today most digital systems use a synchronous global clock to coordinate operations within an integrated circuit, the complexities of distributing such a global clock are becoming overwhelming. Asynchronous circuits do not require a global clock and have other potential benefits over traditional synchronous circuits. Industry has not moved to asynchronous design in large part owing to a lack of CAD tools supporting this technology. Meeting this need is the direct target of this center. It is working with companies such as Intel and IBM not only to help solve their future asynchronous design problems, but also their current difficulties in the analysis and verification of high-speed integrated circuits.
- **Biomolecular Technologies** develops novel biotechnologies focused on key commercial and research needs. The present focus of this new center includes the development of a technology to detect cost-effectively rearrangements in the human genome, including those rearrangements associated with certain cancers. Also, a versatile indexable microplate technology is being developed that can be used to detect and analyze almost any object, including DNA, proteins, nutrients, and pathogenic organisms. These and other technologies being developed by the center promise to impact the biotechnology field generally and have significant potential for commercialization.
- **Cell Signaling** addresses the identification of new therapeutic targets and of new drug candidates for asthma, allergy, inflammation, and cancer. Each of these diseases arises because cells are communicating the wrong information. We can fix that by disrupting incorrect messages and providing correct signals. With over \$6 million in annual external

support, 14 University of Utah faculty researchers from eight different departments on campus combine their talents in a synergistic way to create and commercialize new technologies. Current research includes identification of a new tumor suppressor that is critical to cell adhesion, and when mutated, leads to metastasis. Mining of the human genome with DNA microarrays identifies new drug targets, while development of automated high-throughput screening methods increases the rate of finding new drug candidates. One spin-off company, Echelon Research Laboratories, has developed and now markets reagents and kits for identifying oncogene activators and suppressors important in cancer diagnosis.

- **Composites in Construction** is developing innovative applications of advanced composite materials for repair of existing infrastructure and building inventories. The objectives include corrosion and seismic repairs of reinforced concrete structures. The center is also involved in testing new designs using advanced composites for buildings and bridges. It targets immediate implementation of the technology with parallel durability studies. Programs have received funding from the U.S. Government, the Utah Department of Transportation, and the private sector. Projects completed include a demonstration project of advanced carbon fiber jackets on the I-80 Highland Drive bridge, laboratory testing of T-joints for bridges, testing of precast concrete connections for seismic regions using carbon fiber composites, and in site testing of the South Temple I-15 Highway bridge piers with carbon fiber composites. In addition to minimizing losses to the economy from aging or seismic damage, the center contributes to the development of new commercialization areas for the precast concrete, the glue-laminated timber, and the composites industries. Both retrofit and new construction activities will eventually create new jobs and commercial ventures.
- **Electronic Systems Technology** combines the expertise, resources, and capability of three universities--the U of U, BYU, and USU--to serve the industrial community in electronic systems technology. The goal of the center is to ensure that Utah industry can compete more effectively in the global market and to enhance the opportunities for Utah researchers to develop and commercialize their technologies. Electronic systems technologies include microelectronics, signal processing, communication and control systems, digital electronics, and RF, microwave, and millimeter wave electronics, as well as optoelectronics and electromagnetics. The center provides research, design, evaluation, and prototyping services to Utah businesses that need specialized help in developing new products or enhancing market strengths. Services provided to industry include access to test equipment, laboratory testing, fundamental research and technology development, market analysis, personnel, information, and strategic planning. Research contracts with a large number of technology-based companies have been signed and are in progress.
- **Harsh Environment Electronics (CHEE)** is focused on the development of harsh environment electronics systems such as gallium arsenide-based electronics that operate at high temperatures, MTV electronics, and MTC electrical converters. The center also provides services in the following areas: prototype development and testing; development of high-temperature electronics based on MTV electronics technology; development of tools to test and evaluate flat panel display technologies; and work with industry

(especially businesses located in Utah) in addressing and supporting their flat panel display technology needs. An enhanced flat panel display has been patented. A new company has been established with an option to license the flat panel display technology.

- **Industrial Imaging (CII)** was established to commercialize image analysis, data analysis, and artificial intelligence technologies developed in the geosciences. Research at the University on fluid flow through porous media (I.e., aquifers, petroleum reservoirs) has resulted in generally useful image processing, image analysis, data analysis, and artificial intelligence techniques with commercial applications in geosciences and engineering. Center technologies include Petrographic Image Analysis (PIA), which comprises four components: image acquisition, image processing, pattern recognition/data analysis, and linking to physical models. Each component involves specialized hardware, software, and expertise. The pattern recognition procedure within PIA has also proven useful in chemical fingerprinting in a variety of geoscience/environmental applications. The center has begun to explore areas outside geoscience applications, including the application of PIA to medical imaging, and especially to automated screening of prostate biopsies. The center also has been granted ownership of Integrated Paleontological System (IPS) software for further research, development, and commercialization. The Technical Alliance for Computational Stratigraphy (TACS), a consortium of nine petroleum companies, has been established to fund a three-year commercialization and development initiative.

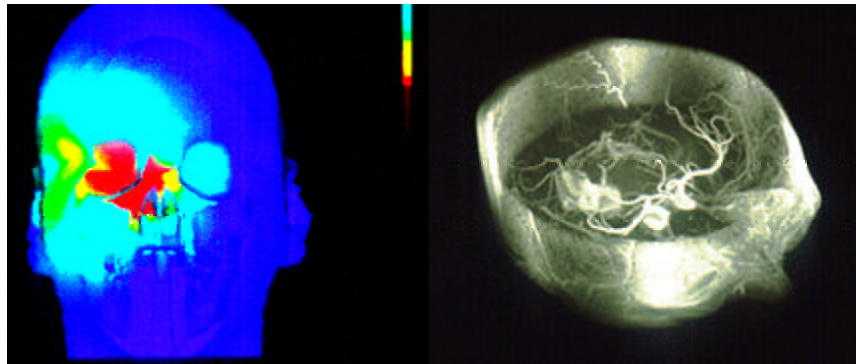


- **Minerals Technology** develops and builds advanced analytical and computer software systems for the mining and mineral processing industry. The center has pioneered the application of mineral liberation analysis as a diagnostic technique for improving the technical and economic performance of major mineral recovery processes. Mineral liberation measurement systems developed at the center are based on advanced computer processing of electron microscope images of mineralogical textures and on microtomographic images of particle assemblies. The center builds complex computer simulation systems that provide accurate descriptions of the internal dynamics of mineral processing equipment and of the operating performance of complete mineral processing plants. Access to these software systems is available through the Internet and by

conventional media. The center maintains a library and comprehensive information database in the field of comminution that is searchable by way of the Internet.

- **Multimedia Education and Technology** commercializes interactive multimedia CD-ROM products for education. The center implements research and development to examine the feasibility of using virtual reality technology in education and corporate training. The center's purposes include development of software and hardware interactive multimedia products for education including simulation software, virtual laboratories, software and hardware for data acquisition and analysis, inexpensive virtual reality applications, as well as production and distribution of interactive multimedia educational modules on CD ROM. Two CD-ROM products have been developed: a multi-platform "Calculus Castle" and "Engineering Electromagnetics." Another CD-ROM in genetics, "History of the Human Gene," is also completed. The center is actively pursuing commercialization of these products. It also manages the Conceptual Learning of Science (CoLoS), USA project, which is a consortium of 11 universities under the sponsorship of Hewlett-Packard Company. In collaboration with John Wiley & Sons, the center continues to publish the award-winning journal, Computer Applications in Engineering Education.
- **Neural Interfaces (CNI)** develops systems that enable research into the parallel processing of information by the nervous system. It is well known that the individual neurons of the nervous system work in an integrated fashion to encode and process sensory information about the world around us, and to generate muscle command signals that enable us to interact effectively with this world. It is only by recording the activity patterns of large groups of neurons that we can begin to understand how sight, hearing, touch, and volitional information is encoded and processed by the brain. The center is creating the tools that make these investigations possible. The CNI has invented silicon-based arrays of microelectrodes that can either listen in on or talk directly to hundreds of neurons simultaneously. This can now be done on a chronic basis in awake and freely behaving animals. The center has developed surgical tools and techniques that allow these high-density microelectrode arrays to be implanted in central and/or peripheral nervous systems. It has also developed data acquisition systems that permit the large amounts of data recorded by these microelectrode arrays to be stored and analyzed in PC-class computers. It has written software that is used to acquire and analyze these neural signals. The long-range goal of the CNI is to use these new neural interfaces as therapies for disorders of the nervous system. Ultimately, these systems may provide limited, but functional sensory restoration in individuals with profound blindness or deafness, and enhanced motor function to individuals with high spinal cord injuries.
- **Scientific Computing and Imaging** was created to make available a commercial version of the SCIRun Software System. This is an interactive, visually based, scientific, engineering, and medical programming environment that allows the interactive construction, manipulation, and visualization of scientific and engineering simulations. SCIRun technology provides scientists and engineers with a new model for scientific computing. The model relies on modern computing technologies such as graphical user interfaces and 3D graphics to provide a visual programming and problem-solving

environment to investigate complex problems. The increased flexibility attempts to provide a "computational workbench" for scientific computing where experiments are formed, new methods explored, and tedious coding kept to a minimum. This past year, a new start-up software company was created from the center's technology. The new company will reside in the University of Utah's Research Park. Several interested in either licensing the SCIRun Software System and/or creating specific technology-oriented software packages based upon the SCIRun software have approached the center. Administrators of the center are Dr. Christopher Johnson, director, and Dr. Steven Parker, associate director.



- **Solid Oxide Fuel Cell Technology** focuses on the development of fuel cell technology for the direct conversion of chemical energy of carbonaceous fuels such as natural or coal gas into electricity at very high efficiency. The main objective is to target residential, remote location, and emergency power markets for on-site conversion of natural gas and other fuels energy into electricity. Initially, the center is developing cell stack technology for a 2 to 5 kilowatt unit, which has many potential applications with emphasis on distributed power for residential and remote locations for on-demand electrical power that is clean, efficient, reliable, and noise-free. The center technologies are based on the design and fabrication of novel, anode-supported solid oxide fuel cells with highly efficient electrodes that have a very low resistance. This concept makes it possible to develop a cost-effective, compact power unit for direct conversion of chemical energy of fuels into electricity for remote and residential applications. A patent on the development of novel electrodes for SOFC was issued. Fuel cells that operate at lower temperatures but with higher efficiency are being developed. The center has been successful in attracting research and development grants from federal agencies, as well as from the Electric Power Research Institute (EPRI) and the Gas Research Institute (GRI).

## UTAH STATE UNIVERSITY

### Companies

- **Campbell Scientific, Inc.** – Brothers Eric and Evan Campbell formed Campbell Scientific Inc., in 1974 while employees of Wescor, a Utah State University spin off business. Eric had received a soil physics degree from Utah State University. Other family members participated and invested in the company. Brother Paul is the current CEO. The company develops data instrumentation for a variety of industrial application.<sup>122</sup>
- **Hyclone Laboratories, Inc.** – HyClone had its beginning in 1976 when its founder, Dr. Rex Spendlove, then a professor of bacteriology and public health at Utah State University, was studying a virus fatal to children. At that time, the quality of commercially available fetal bovine serum was so poor that Dr. Spendlove developed his own methods to produce high quality serum. Serum was initially produced and sold on campus but was subsequently produced and sold by the newly formed company now known as HyClone Laboratories. Today, HyClone is a world leader in production of in vitro cell culture products.<sup>123</sup>
- **Space Dynamics Laboratory** – Space Dynamics Laboratory/USU (SDL) is a DBA (Doing Business As) of the not-for-profit Utah State University Research Foundation (USURF) controlled by Utah State University. Prior to becoming part of USURF in the late 1980s, SDL functioned directly within Utah State University. SDL has over 40 years experience in designing, building and launching space-based infrared sensors and is recognized as a world leader in upper atmospheric and space research. SDL specializes in IR instrument and payload development, cryogenic/vacuum systems, sensor/optic calibration, upper atmospheric measurements and modeling. SDL has approximately \$40 million of research and employs approximately 400 employees including part-time student employees.<sup>124</sup>
- **Zapcode Products Corp.** – Zapcode Products Corp is introducing a new revolutionary system that has the ability to link print materials to the Internet. The finished products are low cost, "plug 'n' play" peripherals that connect to the computer by means of the keyboard port. The end user then installs the software through a self-install CD-ROM or through their Internet connection and is ready to hyperlink to the Web - "The Remote Control to the Internet".<sup>125</sup>
- **Utah State University GAS Program** – Utah State University (USU) has been a forerunner in the NASA Get Away Special (GAS) Program. USU start with the first ever GAS payload, G001, aboard the Space Shuttle in 1982 and has since flown more GAS payloads than any other university in the world. The tenth payload, G090, flew on STS-91, aboard the Space Shuttle Discovery on June 2, 1998.<sup>126</sup>

## UTAH NOTABLES

- **Philo T. Farnsworth** – Born on August 19, 1906 to Lewis Edwin and Serena Bastian Farnsworth in Indian Creek, near the town of Beaver in Southwestern Utah.<sup>127</sup> Philo invented the tube that makes the television pictures possible. Philo completed 2 years of

post high school education at Brigham Young University after which he left to take care of his family following his father's death.<sup>128</sup>

- **J. Willard Marriott** – John Willard Marriott (Bill) was born 17 September 1900 near Ogden, Utah. Bill graduated from Weber Junior College in 1923 and began his first business enterprise, selling woolen clothes from Logan to California. In 1926 he graduated from the University of Utah. He left from Utah for Washington, D.C., opening up a small root beer stand in 1927, which later became known as the Hot Shoppe when food items were added. He soon opened two others shops but when the Great Depression hit he was forced to sell all three. He soon replaced these with two new ones in carefully chosen locations. In 1937, Bill became a pioneer in the airline catering industry and eventually began managing food service in defense plants and government complexes during World War II. By 1955 he added hospital and educational food services. The most famous of his business enterprises was started 1957 when the first Marriott hotel opened. In 1967 and 1968, Bill again entered into the food industry by opening up two new restaurant Big Boy family restaurants in 1967 and Roy Rogers fast food in 1968.<sup>129</sup> Today, there are five separate companies with combined annual sales of over 20 billion dollars: Marriott International, Inc.; Host Marriott Corporation; Sodexo Marriott Services; Crestline Capital Corporation; and Host Marriott Services, which was merged with Autogrill, an Italian company, in 1999.<sup>130</sup>
- **Lester Wire (1857 – 1958)** – Lester Wire, a Salt Lake City policeman, invented the first electric traffic light, wrote Salt Lake City first traffic rules and was the head of the first traffic squad in Salt Lake City. Lester never patented the electric traffic light so he never received any money for the invention.<sup>131</sup>
- **Reva Beck Bosone (1895 – 1983)** – Reva Beck Bosone was born on 2 April 1895 to Christian Mateus Beck and Zilpha Chipman Beck in American Fork, Utah. In 1948 Reva Bosone was elected to the U.S. Congress where she served two terms. While serving in Congress Reva became the first woman to serve on the Interior Committee.<sup>132</sup>
- **John M. Browning (1855 – 1926)** – John Moses Browning was born in Ogden, Utah in 1855. John Browning is known for his ingenious inventions in the firearms industry. He was the inventor of the automatic gun and has been referred to as "the most successful arms inventor in history."<sup>133</sup> Some of the firearms he is most well known for are the Winchester 30/30, the pump shotgun, the Colt 45 automatic, the U.S. Army WWI and WWII machine guns, the Browning automatic shotgun. Many of these firearms are still manufactured today.<sup>134</sup>
- **Martha Hughes Cannon (1857 – 1932)** – Martha Hughes was born 1 July 1857 near Llandudno, Wales, to Peter and Elizabeth Evans Hughes. The Hughes family, converted to The Church of Jesus Christ of Latter-day Saints, immigrated to the United States in March 1860 arriving in the Salt Lake Valley in September 1861. Martha went on to become an elementary school teacher (at the age of 14), study medicine and become a resident physician at a hospital. Martha also became involved in politics and women's

suffrage. She was elected as the first female State Senator in November of 1896 and served two terms as a Senator of Utah.<sup>135</sup>

- **Daniel Jackling (1869 –1956)** – Daniel Jackling, born in 1869 near Appleton City, Missouri, was the founder of the Utah Copper Mine Company, later known as the Kennecott Corporation. Daniel Jackling developed a method for processing low-grade ore resulting in 85 percent of the U.S. copper resources being brought into production by the middle of this century. It is now said that Bingham Canyon, one of the world's largest open-pit mines, can be seen from the moon. Jackling also managed or directed most of the copper companies in the American West.<sup>136</sup>
- **Marriner S. Eccles (1890 – 1977)** – Marriner Eccles was born in Logan, Utah, on 9 September 1890. Marriner was an influential banker and helped in the design of FDR's New Deal, programs designed to stimulate economic recovery for the U.S. As a guest, Marriner testified before the Senate Finance Committee, advocating many of the measures that would become cornerstones of the New Deal. Eccles proposed public works to relieve unemployment and direct relief measures, as well as a minimum wage, unemployment insurance, and old age pensions differing from the traditional views of a hands-off, open market approach, and balanced budgets. Marriner was appointed as the chairman of the Federal Reserve Board in 1934, wrote the Banking Act of 1935 and moved to restructure the Federal Reserve System establishing the independence of the Fed from the Treasury Department. Marriner is also known for his championing of the now-familiar compensatory policies of manipulating interest rates, tax rates, and currency supplies to counter harmful economic trends. In 1982 the Federal Reserve Building in Washington, D.C., was renamed the Marriner S. Eccles Federal Reserve Board Building.<sup>137</sup>
- **Jean Westwood** – Jean Westwood was born in Price, Utah, on 22 November 1923. Jean attended Carbon College (College of Eastern Utah) and took classes at other universities in Utah, Colorado and California. In 1972, Jean became not only the first woman to serve as chairperson of the National Democratic Party, but also the first woman to head a major American political party.<sup>138</sup>
- **Harold Ross** – Harold Ross, the founder of The New Yorker Magazine, grew up in Salt Lake City. At the age of 14, Harold quit school to work at the Salt Lake Tribune. During World War I, Harold edited The Stars and Stripes.<sup>139</sup>
- **Senator Jake Garn** – Jake Garn became the first Senator to fly into space on 12 April 1985. He served as a payload specialist aboard Space Shuttle Mission 51-L. It was not an arbitrary decision allowing Jake Garn to fly aboard the space shuttle he had paid his dues. He first flew as a private pilot then a Navy pilot where he was on active duty for four years. Following the Navy, Jake joined the Air Guard where he served for 20 years.<sup>140</sup>
- **Iomega** – Founded in 1980 by 13 IBM executives<sup>141</sup>, the company's first product, the Bernoulli Box, was a disk drive system used by the government. In 1995 with the debut

of the extremely popular Zip drive Iomega became widely known and transformed the market for external data storage devices.<sup>142</sup>

- This Utah-based company is known for the extremely popular Zip drive, which has sold more than 5 million units. Established as an offshoot of an IBM research facility in Tucson.
- **Icon Health & Fitness** – Scott Watterson, CEO and Gary Stevenson, COO founded Weslo in 1977 as a means to support their pursuit of business majors at Utah State University. In 1987 Weslo purchased Proform Fitness Products, also in Logan, operating it as an independent business. In 1988 Weider Health & Fitness acquired Weslo and Proform Fitness Products. In 1991 two companies were formed, Jumpking, the largest manufacturer of trampolines, headquartered in Garland, Texas and Silicone Products, Inc., a plastic injection molding company, headquartered in Millville, Utah. In November of 1994, Weider Health & Fitness sold the assets of ProForm Fitness Products, Inc. and Weslo, Inc. and Weider Care (American Physical Therapy, Inc.) to a group lead by Bain Capital, Inc. forming what is known today as ICON Health and Fitness, Inc. Headquartered in Logan, Utah ICON is the world's largest manufacturer of retail health equipment.<sup>143</sup>
- **Pacific WebWorks, Inc.** Pacific WebWorks is an application service provider specializing in business software technologies for Internet merchants. The applications allow small to medium sized business owners to expand their business onto the Internet. The company's product, Visual WebTools, allows businesses to create and maintain websites. The product family provides tools for web site creation, management and maintenance, statistics, reporting, surveys, marketing, hosting and e-commerce concerns within the small to medium size business niche.<sup>144</sup>
- **IntelliPay, Inc.** IntelliPay, based out of California, is a wholly owned subsidiary of Pacific WebWorks, Inc. IntelliPay is the leading developer and provider of new payment technologies for businesses-to-business and business-to-consumer uses on the Internet and in physical stores. IntelliPay's various products enable a business to accept real-time payments from their web site, Internet appliances, kiosks, phone, fax or storefront.<sup>145</sup>
- **Deseret Pharmaceutical** - Victor Cartwright and Dale Ballard founded Deseret Pharmaceutical in 1956. In 1957, Deseret introduced the Intracath® central venous catheter, the first sterile disposable device designed for a single use. In 1964, the Angiocath® peripheral I.V. catheter, another of Deseret's products, was introduced and quickly became the leading product for the company and set the industry standard for two decades. Deseret was acquired in 1986 first by Warner-Lambert Company and then by Becton, Dickinson and Company.<sup>146</sup>
- **MyFamily.com & Ancestry.com** – Paul Allen Co-Founder, Vice President of Corporate Development of Ancestry.com, the world's largest genealogy web site. Paul graduated from BYU with a BA in Russian in 1990. He worked at Folio Corporation for a few years

in database development and publisher sales. Allen became co-founder of Infobases in 1990, received the Inc. 500 award in 1996, and became director of Bookcraft, Inc. (a 50-year-old publishing company) in 1997 after it was acquired by Infobases in June 1997.

- Curt joined MyFamily.com in July of 1998 as CEO and was named chairman in January of 2000. Prior to MyFamily.com, Curt served as Chairman and CEO of Folio Corporation, a software business he co-founded in 1986.
  - While at Folio, he initiated a number of strategic partnerships and led the company's move to the Internet. In 1997, Curt orchestrated the sale of Folio Corporation to Open Market Inc., where he remained as vice president of strategy, integrating the acquisition of Folio and managing the company's information commerce strategies. Prior to his work at Folio, Curt was a co-founder of Vidcomp, Inc. a consulting firm and systems integrator.
- **Folio** – Founded by Curt Allen in 1986, Folio went on to become a major technology provider and distributor for electronic reference publishing. Folio was acquired by Open Market in 1997.
- **Vidcomp, Inc.** – a consulting firm and systems integrator founded by Curt Allen.<sup>147</sup>
- **Infobases Inc.** – Founded in 1990 by Paul Allen and Dan Taggart, Infobases specialized in the electronic publishing of religious works. Under their direction, the company received an Inc. 500 award in the mid-1990s as one of the fastest growing companies in America.<sup>148</sup>
  - These two partners then acquired Ancestry Publishing in 1997, and immediately began transforming the 16-year old print publisher into what is today the leading commercial genealogical resource on the Internet, Ancestry.com (www.ancestry.com) and what is also the leading family communication Web site, MyFamily.com (www.myfamily.com).
- **PowerQuest** – “PowerQuest Corporation is a leading software developer and technology pioneer that provides solutions to simplify complex storage management issues. A privately held company located in Orem, Utah, Eric J. Ruff founded PowerQuest in 1993. The company launched PartitionMagic, its premier product, in March 1995. PowerQuest has experienced phenomenal growth, catching the attention of industry analysts, who have recognized PowerQuest as one of the fastest growing software companies in the U.S. and in the top 500 software companies worldwide. PowerQuest was also named to the prestigious Inc. 500 list last year and the Deloitte and Touche Technology Fast 500 two years in a row. To date, PowerQuest's innovative technology has gained more than 165 industry awards.”<sup>149</sup> PowerQuest was also named by Inc. Magazine one of the 500 fastest growing private companies in the US. They ranked #64 out of 500.

- **NextPage** – Founded in 1999 by Brad Pelo, NextPage is somewhat of a P2P (peer-to-peer) company but instead of using client computers to share content the network is built around servers. NextPage's technology is used by big companies (such as giant law firm Baker & McKenzie and consulting giant Deloitte & Touche) to give their employees access to company documents and content stored on various systems around the organization. An example of how this might add value to a company comes in NextPage's ability to enable employees with the ability to access and search documents to avoid replication of work, building a current library of law books.
- **Switchpoint Networks** – Switchpoint Networks was formerly known as AirSwitch Corporation has just completed their second round of financing by venture capitalists. Headquartered in Orem and founded in 1999 by Keith Anderson, Switchpoint has developed a next-generation solution for the "last mile bottleneck" using a technology that enables broadband Internet access at speeds of 100 Mbps. Unlike competitors Switchpoint offers networks that are fully duplexed and bi-directional, allowing subscribers the ability to send and receive data simultaneously and at equal speeds. SwitchPoint has a competitive advantage in that their digital networks can be constructed for far less than the cost of competing technologies such as fiber-to-the-home implementations. This Ethernet-based, peer-to-peer technology is suitable for residential and small business markets in the U.S. and abroad.<sup>150</sup>
- **iTransact.com** – Based in Salt Lake City, iTransact.com is a leading developer of total Internet payment solutions. RediCheck a service offered by iTransact has been in use since 1994 and was the first check payment system to be introduced on the Internet. "iTransact.com, Inc. was one of the first companies to offer all the following: (1) Internet-based real-time check acceptance; (2) Real-time credit card verification, authorization, and processing; (3) Payment acceptance via electronic funds transfer; (4) An integrated shopping cart system; and (5) High-speed, redundant connections. iTransact.com processes millions of dollars in transactions monthly and has demonstrated that its systems are stable and secure. iTransact.com's proprietary technology base and its ability to continually introduce innovative payment solutions keep the company on the cutting edge of transaction services."<sup>151</sup>
- **Authorize.net** – Founded in 1996 by David Heaps and Jeff Knowles, Authorize.net was acquired by Go2net.com on July 1, 1999 for \$90.5 million. Prior to being acquired Authorize.net was a leading provider of payment-processing services for e-commerce - providing secure, reliable and easy-to-use payment solutions.<sup>152</sup>
- **Gentner Communications Corp.** – Gentner "develops, markets and distributes products and services to the professional communications, broadcast, business and consumer markets. Designed to help lower the cost of doing business by reducing the need for travel, Gentner's products and services include audio and videoconferencing systems, and a full suite of teleconferencing services, including full-service conference calling, Instant Access Conference Calling(TM), and Web conferencing. Other offerings include sound reinforcement products, telephone interface products and assistive listening systems."<sup>153</sup>

- **RC Willey** – In 1932 Rufus Call Willey started his business selling appliances out of his pickup truck - door to door. In 1949 R.C. opened his first store in Syracuse Utah a little town with less than 300 people. His 600-square foot building had one employee and a 9-party phone line. Today R.C. Willey is the largest home furnishings retailer West of the Mississippi and is owned by the investment giant Warren Buffett of Berkshire Hathaway Company.<sup>154</sup>
- **Huntsman Chemical Corporation** – Headquartered in Salt Lake City, Utah Huntsman Chemical Corporation “is the largest privately held chemical business in North America and was founded by Jon Huntsman, a philanthropist who devotes a large portion of earnings to charities. The company makes petrochemicals (used in detergents and textiles); surfactants (used in adhesives and paper processing); polyurethanes (used in foams and coatings); and titanium dioxide pigments (used in consumer products). Huntsman sells its chemicals to companies in the plastics, automotive, construction, high-tech, health care, personal care, and textiles industries.”<sup>155</sup>
- **Dentrix** – Founded in 1989 by Larry Gibson, Dentrix is the leading software provider for Dentists.<sup>156</sup> Dentrix is a Windows based computer software program that allows dental offices the ability to manage their scheduling, billing, patient records, treatment charting, and patient education functions.<sup>157</sup> Dentrix was acquired in 1997 for \$36 million by its leading competitor, Henry Schein.<sup>158</sup>
- **Single Trac Entertainment Technologies** – was the leading software game developer until October of 1997 when GT Interactive Software acquired the company for \$16 million in cash and stock.<sup>159</sup>
- **Teklution, LLC** -- Teklution was founded in 1993, under the name Component Technologies, Inc. Teklution's core products and services include IC programming, tape & reel packaging and material management solutions for electronic components. In October of 2000 Teklution made number 90 on Inc. 500 fastest growing private firms in the nation. They currently have offices in Utah, headquarters, Idaho, and North Carolina.<sup>160</sup>



## **UTAH HAS A GROWING WORKFORCE**

UtahFacts.org has tracked the growth of Utah counties and cities. Among the fastest growing counties are those that surround the Wasatch Front. Summit, Tooele, Wasatch, Juab, and Sanpete Counties have all grown more than 40% in the 1990s. The suburbs are expanding, giving local businesses better access to an adequate workforce. Washington and Iron Counties to the south also experienced substantial growth rates in the 1990s. Washington County had a growth rate of 86%, while Iron County had a growth rate of 62.5%. The economies of these areas are doing very well. As more and more retirees settle in these areas, jobs are created. The younger population has more opportunity and businesses have a marketplace for their products and services. The fastest growing city was Draper, which, more than tripled in size during the 1990s. Growth in these counties means that there are more people to work for companies located along the Wasatch front.

Looking at labor force statistics it can be seen population growth along the Wasatch Front has caused the labor force to also grow. The Bureau of Labor Statistics reported on the state of the Utah Economy most recently on June 27, 2001. Utah's labor force has steadily grown since December 2000. In December there were 1,127,000 workers and in May there were 1,136,700 workers. Despite the growth in the labor force the unemployment rate stayed under 4% during that time.

The state is expecting a substantial increase in the school-age population (ages 5-17) beginning in 2004 and extending to at least 2015. The school-age population is projected to increase to 523,000 by 2005 and to 600,000 in 2010.<sup>161</sup>

The following chart displays the census bureau's projections of the population from until 2025, breaking population down by age.

**Chart 1**

<b>Projections of the Population</b>					
<b>Age</b>	<b>7/1/95</b>	<b>7/1/00</b>	<b>7/1/05</b>	<b>7/1/15</b>	<b>7/1/25</b>
0-4	184,000	192,000	209,000	223,000	225,000
<i>Growth</i>		4.35%	8.85%	6.70%	0.90%
5-17	490,000	527,000	550,000	571,000	605,000
<i>Growth</i>		7.55%	4.36%	3.82%	5.95%
18-24	247,000	298,000	314,000	316,000	320,000
<i>Growth</i>		20.65%	5.37%	0.64%	1.27%
Total 0-24	921,000	1,017,000	1,073,000	1,110,000	1,150,000
<i>Growth</i>		10.42%	5.51%	3.45%	3.60%
25-64	858,000	988,000	1,104,000	1,222,000	1,238,000
<i>Growth</i>		15.15%	11.74%	10.69%	1.31%
Over 65	172,000	202,000	234,000	338,000	495,000
<i>Growth</i>		17.44%	15.84%	44.44%	46.45%
Total All	1,951,000	2,207,000	2,411,000	2,670,000	2,883,000
<i>Growth</i>		13.12%	9.24%	10.74%	7.98%
<i>Source: <a href="http://www.census.gov/population/projections/state/stpjage.txt">http://www.census.gov/population/projections/state/stpjage.txt</a></i>					

Utah's median age as of the last census was 27 years translated into 1,036,129 people under the age of 25.

People under the age of 18 accounted for 32.2% of our population. This was higher than the national percentage, which was 25.7%.<sup>162</sup>

Utah was ranked 4th in the nation with a population growth rate of 29.6% between 1990 and 2000. Utah's natural increase accounted for 88% of Utah's population growth. Net in-migration occurred for the ninth straight year in 2000.<sup>163</sup>

Utah job growth from 1999 to 2000 was 2.4%, being ranked 7<sup>th</sup> with Wyoming behind (in order 1 – 6) Nevada, Arizona, Florida, Idaho, California, and Texas.<sup>164</sup>

## **UTAH IS EDUCATION-MINDED AND TECH SAVVY**

### **EDUCATION-MINDED**

Ninety-one percent of Utahns have a high school diploma or more. 27.9% of Utahns have a college degree or more.<sup>165</sup> With this, Utah has the 4<sup>th</sup> highest percentage of high school graduates and the 11<sup>th</sup> highest percentage of college graduates in the nation.<sup>166</sup>

### **EDUCATION FUNDING**

Because of the Class Size Reduction Initiative, Utah received \$7.7 million in 1999 to hire about 198 new, well-prepared public school teachers and reduce class size in the early grades. President Bill Clinton secured funding for a second installment of the plan, giving Utah an additional \$8.3 million in 2000.<sup>167</sup>

During the fiscal year 2000, Utah received \$2.1 million for the Technology Literacy Challenge Fund. This helps communities and the private sector ensure that every student is equipped with the computer literacy skills needed for the 21<sup>st</sup> century.<sup>168</sup>

Utahns spend \$91.65 for every \$1,000 of personal income on education (3<sup>rd</sup> highest in the nation). Utah's education expenditures as a percent of total direct state and local expenditures rank second in the nation at 41.5%. The average of the 50 states is 33.5%.<sup>169</sup>

The Montana Center for Applied Economic Research summarized a few education rankings. Utah was ranked 1<sup>st</sup> in the country for Education Efficiency. This measurement is basically the "bang-per-buck" of education. It is a measurement that businesses would use if they were measuring efficiency. It was calculated by using the standardized average of the cost per student per unit measured output. Three measures were used:

1. The cost per student per percent of reading above or at 4<sup>th</sup> grade level,
2. The cost per student per percent of math above or at 4<sup>th</sup> grade level, and
3. The cost per student per ACT point.<sup>170</sup>

Morgan Quitno's 2001 State Rankings reported that Utah had the 3<sup>rd</sup> highest expenditures for education as a percent of all state and local expenditures in 1997. Utah spent 39.8% of its budget on education. Only Indiana and Vermont were higher with 41.0% and 40.3% respectively.<sup>171</sup>

### **HIGHER EDUCATION**

Utah has nine public colleges and four private institutions of higher learning. The University of Utah, Utah State University, and Brigham Young University are well-known research universities. The University of Utah has a nationally ranked law school and medical school. Brigham Young University has a nationally ranked business and law school.<sup>172</sup>

In 1997, the National Fast pitch Coaches Association (NFCA) announced in its November issue of its magazine that Southern Utah University's softball team was named to the All-Academic Team list based on the grade-point averages submitted from the 1996-97 school year. They finished first in the nation with a 3.582 GPA.<sup>173</sup>

## **PUBLIC SCHOOL SUCCESS**

Utah is 1st in the nation in both advanced placement participation and performance on a per capita basis.<sup>174</sup>

The Salt Lake Tribune reported in December 2000, "Utah ranks among the top states in the nation in preparing its high school students to enter college, according to a national study... The National Center for Public Policy and Higher Education gave Utah an 'A' in the preparation category on its report card on higher education, saying 'a very large proportion' of Utah's young adults earn a high school diploma or the equivalent by age 24. The study was based on quantitative levels of states' performance. Utah's percentage of eighth-graders taking algebra was the highest in the nation, at 54 percent. Top states, by comparison, had about 28 percent."

## **EDUCATION AND TECHNOLOGY**

Utah provides incentives for school districts to acquire technology infrastructure. Utah installs Internet connections at every school and pays for most of the line charges.<sup>175</sup>

University of Utah was one of four schools chosen as a test site by Microsoft for its new state-of-the-art package of software and resources designed to enhance teaching and research at national universities. This program is called Microsoft Developer Network Academic Alliance (MSDN-AA). Students and faculty members will be able to use MSDN-AA for coursework or to enhance teaching, curriculum development, and research.<sup>176</sup>

## **HEADLINES**

"Good News about Public Schools in Utah"<sup>177</sup>

- Utah's public high schools are offering more challenging courses. Now, 80% of its public high schools offer Advanced Placement (AP) courses through which students can earn college credit. Private high schools are significantly less likely to offer these advanced courses. \*College Board, 2000 AP National Summary Report Tables.
- Since 1990, Utah's Math SAT college entrance examination scores have risen faster than the national average. \*College Board. "College Bound Seniors 2000."

- The number of Utah teachers being honored with certification from the prestigious National Board of Professional Teaching Standards is 4 times greater than it was in 1999. *\*NBPTS, "State-by-State Listing" November 2000.*
- The National Center for Public Policy and Higher Education gives Utah a grade of "A" and a perfect score of "100" for how well its schools prepare students for college. Utah is only one of 5 states to receive such a perfect score. *\*Measuring Up 2000: The State-by-State Report Card for Higher Education.*
- Utah ranks as the very best—1<sup>st</sup> out of 50 states—for having the greatest proportion of 8th grade students taking algebra. *\*The National Center for Public Policy and Higher Education, Measuring Up 2000: The State-by-State Report Card for Higher Education.*
- The U.S. Department of Education awarded the Utah State Office of Education a Reading Excellence Act grant totaling \$7 million over the next two years. The goal of the grant is to help children read on grade level by the end of the third grade. *\*Utah State Office of Education.*
- Utah ranks among the best—3<sup>rd</sup> out of 50 states—for having the greatest proportion of high school students with scores of 3 or higher on Advanced Placement Exams. A score of 3 or higher typically qualifies for college credit. *\*The National Center for Public Policy and Higher Education, Measuring Up 2000: The State-by-State Report Card for Higher Education.*
- At 71%, the percentage of public school teachers who report that they address algebra and functions a lot in the 8<sup>th</sup> grade is one of the highest in the nation. *\*NEGP, 1999 National Education Goals Report.*
- Utah is tied for first in the nation for having an exceptionally high percentage of students (59%) taking upper-level mathematics courses. *\*NCES, Digest of Educational Statistics 1999.*
- Utah has one of the highest high school graduation rates in the country. Ninety-one percent (91%) of Utah's young people graduate from high school. *\*NEGP, 1999 National Education Goals Report.*
- The percentage of 4<sup>th</sup> graders who scored at the highest two levels in mathematics increased by 21% between 1992 and 1996 (date of most recent national math test). *\*NCES, Digest of Educational Statistics 1999. The National Assessment of Educational Progress (NAEP) administers comprehensive, standardized tests to a representative sample of the nation's students in fourth grade. Results on the NAEP tests are the nation's primary indicator of how well students are doing in math.*

#### “New and Innovative Approaches — Moving Us Forward”<sup>178</sup>

- The Utah Education Association lobbied successfully in 1998 for sufficient funding to the school districts to reduce class size by two students per class in the middle schools. In the first year, the legislature allocated about \$9 million. The class size reductions in the middle school level follow UEA's successful efforts in 1990 to reduce class sizes in

kindergarten through sixth grade. Class sizes in kindergarten through third grade now average about 22 to 25 students per teacher, compared to 32 to 35 students per teacher a decade ago. \*Stepping Forward: *How NEA Members Are Revitalizing America's Public Schools*. National Education Association, March 1999.

- Odgen community members, the local school board, and the Odgen Education Association are taking steps to expand participation, raise standards, and improve teaching and learning in every school. The superintendent formed a strategic planning committee that gathered input from 400 citizens. The school system encourages participation in governance and policy decisions and has given greater autonomy to local schools. The community is much more aware of what is happening in the schools and what help is needed. \*Stepping Forward: *How NEA Members Are Revitalizing America's Public Schools*. National Education Association, March 1999.

## TECH SAVVY

The New Economy Index for the year 2000 ranked Utah as the 6<sup>th</sup> best state in the nation. This ranking is based on criteria such as:

- Office jobs
- Professional jobs
- Workforce education
- Export focus of manufacturing
- Foreign direct investment
- Gazelles (Quickly growing firms)
- Job Churning
- New publicly traded companies
- Online population
- Commercial internet domains
- Education technology
- Digital government
- High-tech jobs
- Scientists and engineers
- Patents
- Industry R&D investment
- Venture capital

Utah scored in the top ten in six of these categories. Utah was ranked the highest in workforce education level; being third in the nation. (Refer to “Utah Is Education-Minded.”<sup>179</sup>

## COMPUTERS

Associated Press reported in October 2000 that Utah is ranked first in home computers. 66.1% of Utah homes have a computer. Alaska is second with 64.8%.<sup>180</sup>

50% of Salt Lake City's resident have Internet access at work or at home. The number of people online shows the metro area's progress towards the digital economy. Salt Lake City also has the most total capacity of all Internet backbone links to other metropolitan areas as a share of total employment. Salt Lake City has 103 Mbps (megabits per second) per 1,000 employees. Denver has 57 Mbps tying for fourth with Dallas.<sup>181</sup>

Provo/Orem was ranked 15<sup>th</sup> in the 1999 Top 25 Areas for Software Employment. This shows Utah's strength in the software industry and the education levels of Utah employees.<sup>182</sup>

## GOVERNMENT

More than 82 percent of 1999 Utah income tax returns were filed electronically. Nationally, only 65% of individual returns received by state tax agencies were filed through non-paper programs.<sup>183</sup>

In March 1999, Governor Leavitt of Utah signs the Digital State legislation into effect using iLumin's Online Signing Room, becoming the first governor to complete legislation electronically.<sup>184</sup>

Utah ranks number five overall in the Digital States Survey. In providing government services online, Utah ranks number ten.<sup>185</sup>

## HEADLINES

- Utah has been named the top state for computer ownership by the U.S. Department of Commerce's new report *Falling Through The Net: Toward Digital Inclusion*, a report on America's access to technology tools. The report, released October 16, 2000, says that 66.1% of Utah's households have at least one computer. A copy of the full report is available online at [www.osec.doc.gov](http://www.osec.doc.gov). U. S. Department of Commerce, October 16, 2000
- Utah Governor Michael Leavitt is featured on the cover of the August 14, 2000 issue of *The Industry Standard Magazine*. Included in the issue is a 14-page story featuring the Utah/Silicon Valley initiative, which targets the Northern California area as part of the state's business recruitment efforts.
- "Many IT and high-tech companies have elected to either expand or relocate here (Utah). The cost of living is comparatively low and air transportation in and out is excellent. It's not hard to do business here. Perseverance combined with deep-rooted values in a setting of majestic beauty, gives Utah a competitive edge." *Business Xpansion Journal*, August 2000
- Salt Lake City was named one of the 46 "hot spots" that matter most in the new global high-tech network by *WIRED* magazine. *WIRED* magazine, July 2000

- Scarborough Research of New York City ranked Salt Lake City the number one computer-savvy city in the nation. Salt Lake Tribune, June 2000
- The Salt Lake City/Ogden metropolitan area has been named one of the top 20 best places in America to do business or advance your career by Forbes magazine. Forbes magazine, May 2000
- The Salt Lake City/Ogden area has been named the number one place to live in the sixth edition of *Places Rated Almanac*. The book was released in November 1999. Salt Lake City has been named number three among the “High-Tech Hot Spots” for start-up companies by Entrepreneur’s Business Start-Ups magazine. Business Start-Ups magazine, November 1999
- The Salt Lake City/Ogden area has been named the number two large city for locating a business. Entrepreneur magazine, October 1999 The Provo/Orem and Salt Lake City/Ogden areas were named two of the 10 most economically productive cities in the nation by Decision Analyst Inc., a Texas-based independent research firm. The study was funded by Sprint. Plants Sites & Parks magazine, June/July 1999

## UTAH IS AFFORDABLE

### DOING BUSINESS

The following chart displays recent real estate prices for cities in the intermountain west. Salt Lake City is quite competitive.

**Chart 2**

<b>Comparison of Western Industrial Real Estate Prices</b>			
Based only on 60,000 - 99,999 square feet			
	Sales Prices	Net Lease Prices	Construction
	(\$/sf)	(\$/sf)	(\$/sf)
Albuquerque	\$45	\$4.50	\$35
*Las Vegas	\$42	\$3.84	\$25
Reno/Sparks	\$34	\$3.16	\$31
Phoenix	\$45	\$4.25	\$40
Sacramento	\$34	\$3.36	\$27
<b>Salt Lake City</b>	<b>\$31.65</b>	<b>\$3.36</b>	<b>\$27</b>
San Diego	\$55.51	\$6.54	\$36.75
San Jose	\$122.50	\$12.50	\$105
<i>Averages from Society of Industrial and Office Realtors 2000 Comparative Statistics of Industrial and Office Real Estate</i>			
<i>*Las Vegas rates are based on 1999 data</i>			
<i>Source: <a href="http://www.expand2nevada.com/site_selectors/construction.html">http://www.expand2nevada.com/site_selectors/construction.html</a></i>			

“Rapid productivity growth has yielded declining unite labor costs in a number of states over the past decade. Utah [is one of] the clearest examples of this trend. Though [it] posted annual average wage growth at or slightly above the US average, [it] nearly doubled the national average in gross product growth over the same period,” said Economy.com in their Regional Financial Review in November 2000.

In the same report, Utah’s Cost of Doing Business Index was at 93.6 where 100 is the national average making it the 17<sup>th</sup> best state. This is a decrease since 1990. In 1990, the Cost of Doing Business Index was at 100.2, slightly above the national average. Its Unit Labor Cost Index was 95.9 making it the 23<sup>rd</sup> best. The Energy Index was at 74.7 making it the 5<sup>th</sup> best state. Individual cities were evaluated in the same report. Economy.com includes the cost of labor, energy, taxes, and office space in its measure of relative business costs at the metro area level,

where office space is left out of the state indices. Utah's index for office rent was 90.9 where a score of 100 is the national average.

The Salt Lake City Metro Area's indices were very similar to the state as a whole.<sup>186</sup>

## **COST OF LIVING**

Lorri Kocinski-Puchlik, executive director of the St. George Area Chamber of Commerce, describes the southern Utah economy as "totally different." She said many industries in southern Utah are seeing growth. While manufacturing has dropped nationally, in Washington County it is up one percent from a year ago. At the same time, the cost of living in southern Utah has dropped four percent over the last two years.<sup>187</sup>

### **Income**

Utah's average annual pay in 1999 was \$27,884. This ranks Utah as 33<sup>rd</sup> highest out of the 50 states. District of Columbia was above all 50 states at \$50,742. The top ten are:

▪ Connecticut	\$42,653
▪ New York	\$42,133
▪ Massachusetts	\$40,331
▪ New Jersey	\$39,516 (1998 Figure)
▪ California	\$37,564
▪ Illinois	\$36,279
▪ Washington	\$35,736
▪ Michigan	\$35,734
▪ Delaware	\$35,102
▪ Maryland	\$34,472

Utah's median household income is higher however at \$45,257. This ranks Utah as the 8<sup>th</sup> highest out of the 50 states. District of Columbia falls near the 38<sup>th</sup> or 39<sup>th</sup> highest rated state at \$35,309. The top ten are:

▪ Alaska	\$51,046
▪ Maryland	\$50,630
▪ New Jersey	\$50,234
▪ Connecticut	\$47,997
▪ Colorado	\$46,950
▪ Minnesota	\$46,802
▪ Washington	\$46,788
▪ Utah	\$45,257
▪ New Hampshire	\$44,891
▪ Virginia	\$44,884

Utah had a 3.8% change in the average annual pay from 1998 to 1999. Utah ranked 22<sup>nd</sup> with Alabama with this growth rate. Utah had the 12<sup>th</sup> lowest unemployment rate in 2000 at 3.2%.<sup>188</sup>

### Taxes

Utah's average annual taxes paid for a Utah family of four is estimated at \$5,438 making it the 13<sup>th</sup> least expensive state for taxes. The average annual tax paid is an estimate of personal income, residential property, and sales tax. Utah has one of the lowest property tax rates. It is at 1.35% of fair market value or .90% average overall compared to the most expensive state, New Jersey. They have a property tax rate of 11.56% of fair market value. This makes Utah the 4<sup>th</sup> lowest state in the nation.<sup>189</sup>

### Housing

Legislators created the Quality Growth commission in 1999. The commission's main function has been to dole out grants for planning and preserving open space. Governor Leavitt told commission members that the State should offer support through incentives. He feels the state should encourage a mix of housing types to maintain affordability for the growing work force.<sup>190</sup>

Utah's average value of new housing units in 2000 was \$118,518. The highest five in the country were:

▪ Wyoming	\$199,385
▪ Hawaii	\$166,968
▪ California	\$160,180
▪ Alaska	\$151,074
▪ Connecticut	\$150,987

Utah's homeownership rate in 2000 was 72.7%. This indicates a stable economy where almost three-fourths of the homes in Utah are occupied by the owner.<sup>191</sup>

### Higher Education

Utah was one of five states to get an A grade for the affordability of higher education for students and their families. This depends on tuition levels, types of financial aid available to students, and the students' reliance on loans.<sup>192</sup>

## SALT LAKE CITY VS ...

Chart 3

	Metro Population	Cost of Living (% of Nat'l Average)	3 Bdrm Home	2 Bdrm Rent	Income/Home \$
<b>Salt Lake City</b>	1.2 million	96.78	160,000	795	18.4%
<b>Boston, MA</b>	3.8 million	178.96	516,842	1,800	7.4%
<b>San Jose, CA</b>	1.7 million	198.95	569,000	1,244	10.3%
<b>Austin, TX</b>	1.1 million	105.33	180,000	885	19.8%
<b>Denver, CO</b>	1.9 million	123.43	264,509	811	10.9%
<b>Los Angeles, CA</b>	3.1 million	130.29	285,000	972	11.5%
<b>Seattle, WA</b>	2.3 million	142.05	297,282	1,025	13.5%

Source: <http://nt.mortgage101.com> & <http://www.homefair.com>

### Boston, MA

Boston, Massachusetts has long been a technology center. The metro area surrounding it has over 3.8 million people. Boston is a more expensive city than Salt Lake City. Its cost of living index is 178.96 percent of the national average whereas Salt Lake's is much lower at 96.78 percent of the national average. The average price of a 3-bedroom home is \$516,842 and rent for a 2-bedroom apartment is \$1800. The same prices in Salt Lake City are \$160,000 and \$795 respectively. For a family of four making \$50,000 per year, state income tax only is just over \$2000 in Utah whereas it is over \$2400 in Massachusetts. Driving is also a more expensive activity in Massachusetts. The family of four would pay over \$1000 per year for automobile insurance. The same coverage in Utah would only cost around \$800. This also shows Utah is a safer place to drive. Electricity is very important to companies. The average monthly cost of electricity in Boston for the family of four is almost \$90 per month. In Utah, it is just under \$50. As a percentage of the home price, the median household income in Boston is 7.4 percent. In Salt Lake City that number is 18.4 percent. Money in Salt Lake City goes much further than in Boston.<sup>193</sup>

### San Jose, CA

San Jose is the capital of Silicon Valley. The metro area surrounding it has over 1.7 million people. Its cost of living index is 198.95 percent of the national average whereas Salt Lake's is much lower at 96.78 percent of the national average. The average price of a 3-bedroom home is \$569,000 and rent for a 2-bedroom apartment is \$1244. The same prices in Salt Lake City are \$160,000 and \$795 respectively. As a percentage of the home price, the median household income in San Jose is 10.3 percent. In Salt Lake City that number is 18.4 percent. Money in Salt Lake City goes much further than in Silicon Valley.<sup>194</sup>

### Austin, TX

Austin, Texas is the capital of Texas. It is also the headquarters of Dell Computers. The metro area surrounding it has over 1.1 million people. Its cost of living index is 105.33 percent of the national average whereas Salt Lake's is lower at 96.78 percent of the national average. The average price of a 3-bedroom home is \$180,000 and rent for a 2-bedroom apartment is \$885. The same prices in Salt Lake City are \$160,000 and \$795 respectively. As a percentage of the home price, the median household income in Austin is actually higher than Salt Lake City. It is 19.8 percent. The property tax rate is 2.68%, where Salt Lake's is 1.24%. However, Texas does not have an income tax.<sup>195</sup>

### Denver, CO

Denver, Colorado is a western technological hub. The metro area surrounding it has over 1.9 million people. Denver is somewhat more expensive than Salt Lake City. Its cost of living index is 123.43 percent of the national average whereas Salt Lake's is lower at 96.78 percent of the national average. The average price of a 3-bedroom home is \$264,509 and rent for a 2-bedroom apartment is \$811. The same prices in Salt Lake City are \$160,000 and \$795 respectively. Driving is also a more expensive activity in Colorado. The family of four would pay approximately \$1000 per year for automobile insurance. The same coverage in Utah would only cost around \$800. This also shows Utah is a safer place to drive. The average monthly cost of electricity in Denver for the family of four is \$54 per month. In Utah, it is comparable at just \$49. As a percentage of the home price, the median household income in Denver is just under 11 percent. In Salt Lake City that number is 18.4 percent. Money in Salt Lake City goes further than in Denver.<sup>196</sup>

### Los Angeles, CA

Los Angeles, California has the largest wholesale district in the nation. The metro area surrounding it has over 3.1 million people. Los Angeles is a much more expensive city than Salt Lake City. Its cost of living index is 130.29 percent of the national average whereas Salt Lake's is much lower at 96.78 percent of the national average. The average price of a 3-bedroom home is \$285,000 and rent for a 2-bedroom apartment is \$972. The same prices in Salt Lake City are \$160,000 and \$795 respectively. For a family of four making \$50,000 per year, property tax only is \$1,344 for a 2,000 square foot house in Utah whereas it is over \$2,900 in Los Angeles. Driving is also a more expensive activity in California. The family of four would pay over \$1,400 per year for automobile insurance. The same coverage in Utah would only cost around \$800. Electricity is very important to companies. The average monthly cost of electricity in Los Angeles for the family of four is almost \$70 per month. In Utah, it is just under \$50. As a percentage of the home price, the median household income in Los Angeles is 11.5 percent. In Salt Lake City that number is 18.4 percent. Money in Salt Lake City goes much further than in Los Angeles.<sup>197</sup>

## Seattle, WA

Seattle, Washington is a major inland Pacific Ocean port on Puget Sound. The metro area surrounding it has over 2.3 million people. Seattle is more expensive city than Salt Lake City. Its cost of living index is 142.05 percent of the national average whereas Salt Lake's is much lower at 96.78 percent of the national average. The average price of a 3-bedroom home is \$297,282 and rent for a 2-bedroom apartment is \$1025. The same prices in Salt Lake City are \$160,000 and \$795 respectively. For a family of four making \$50,000 per year, property tax only is \$1,344 for a 2,000 square foot house in Utah whereas it is over \$2,700 in Seattle. Driving is also a more expensive activity in California. The family of four would pay over \$1,150 per year for automobile insurance. The same coverage in Utah would only cost around \$800. As a percentage of the home price, the median household income in Seattle is 13.5 percent. In Salt Lake City that number is 18.4 percent. Money in Salt Lake City goes much further than in Seattle.<sup>198</sup>

## **UTAH IS SAFE, CLEAN, AND LIVABLE**

### **SAFE**

#### **CRIME**

“Robbery per 100,000 residents in Nevada, where gambling has been legal for years, is six times higher than in gambling-restricted Utah,” states Thomas Kuhn of the University of Illinois.<sup>199</sup>

All of the counties in Utah have less than 70 crimes per 1,000 residents reports the Utah Bureau of Criminal Investigation. The majority of counties have less than 30 crimes per 1,000 residents.<sup>200</sup>

Violent crimes include murder, rape, robbery, and aggravated assault. Utah’s violent crime rate in 2000 was 238, an 8.8% decrease over 1999. Since its peak in 1997, Utah’s violent crime rate has decreased 25.1%. The rate in 2000 reflects a 21 year low. Index crimes include murder, rape, robbery, aggravated assault, burglary, larceny, motor vehicle theft, and arson. Utah’s total index crime rate in 2000 was 4,087, a 12.6% decrease over 1999. Utah’s index crime rate fell 7.2% between 1998 and 1999.<sup>201</sup> Since its peak in 1995, Utah’s total index crime rate has decreased 29.7%. The rate in 2000 reflects a 21 year low.<sup>202</sup>

Morgan Quitno conducted a study of the crime rates, based on six crimes, in large cities throughout the United States. Three Utah cities, Sandy, Provo, and Orem, were ranked among the safest cities. A score of 0 would reflect an average crime rate at the national rate. A negative score reflects an average rate below the national rate. Orem, Utah was ranked the 14<sup>th</sup> safest with a score of (65.28). Provo, Utah was ranked 28<sup>th</sup> safest city with a score of (55.6). Finally, Sandy, Utah was ranked the 31<sup>st</sup> safest city with a score of (53.44).<sup>203</sup>

Utah’s juvenile arrest decreased 27% between 1992 and 1997 as measured by the FBI and Uniform Crime Report indices.<sup>204</sup>

According to Morgan Quitno, Utah’s murder rate in 1999 was 2.1 per 100,000 people. That ranks Utah sixth in the nation for lowest murder rate. Utah’s robbery rate in 1999 was 54.4 per 100,000 people. This puts Utah 11<sup>th</sup> out of the 50 states and District of Columbia for lowest rate.<sup>205</sup>

#### **HEALTH**

The Arizona Republic reported in October 2000 that *Self Magazine* “ranked 200 cities based on 24 health factors, including air and water quality, toxic wastes, availability of parks and outdoor recreation, number of smokers, fruit and vegetable purchases, infectious diseases, crime rate, traffic accidents, available healthcare and health facilities, doctor and hospital rankings, and the incidence of breast, colon, and lung cancer.” Provo, Utah was ranked number 1 in this Health rating.<sup>206</sup>

## CLEAN

### GOVERNMENT EFFORTS

Utah has the Utah Indoor Clean Air Act, which requires that there be no smoking in public places. The last substantive amendment to this act was made in August 1996.<sup>207</sup>

Utah has the country's first pornography czar, a government official working with the attorney general's office who is dedicated to fighting pornography.<sup>208</sup>

Utah has enacted the Utah Clean Fuel Loan Program in December 1997.<sup>209</sup> The purpose of it this program is to:

- Establish procedures for government agencies and private sector vehicle owners to convert vehicles to a clean fuel or to purchase or lease original equipment manufacturer vehicles as provided under Section 9-1-703.
- Establish procedures for government agencies and private sector vehicle owners to purchase or lease clean fuel refueling equipment for vehicles as provided under Section 9-1-703.
- Establish criteria and conditions for awarding program monies.
- Establish criteria and conditions for loan repayment and the collection of loans authorized by Section 9-1-703.
- Establish a loan repayment schedule, not to exceed ten years.

Utah's reputation as a haven for those own natural gas powered vehicles is growing. Utah has 94 natural gas refueling sites, 22 of which are open to the public, which according to the Alternative Fuel Data Center is the fourth largest number of refueling sites of all states. Most of Utah's refueling stations are located between Ogden and Orem. Park City and St. George each have one also. The Salt Lake area alone has 31 stations with almost half of them being open to the public. To encourage purchases of natural gas powered vehicles, Utah legislators increased the tax credit to cover 50% of the cost of buying or converting a vehicle in 2000. They also increased the maximum amount that can be claimed to \$3,000. Additionally, the cars can be driven in the carpool lane on I-15 even if only one person is in the vehicle.<sup>210</sup>

Utah is one of two states that is using a computer system installed on 1996 or later cars that evaluates the emissions throughout the life of the car. The Washington Post reported, "Inspectors would check the computer to see if emissions were within guidelines, providing a more thorough evaluation than the current tailpipe check that test emissions only at the moment of inspection, officials said. Don Zinger, assistant director of the office of transportation and air

quality said the agency is encouraging states to implement the technology. So far Oregon and Utah have done so.”<sup>211</sup>

## **POLLUTION**

Morgan Quitno published the rates of hazardous waste sites on the National Priority List per 10,000 square miles in 2001. The national rate is 3.4. Utah has 2.4 and is the 18<sup>th</sup> lowest out of the 50 states.<sup>212</sup>

Recently, Utah’s added cancer risk per 1,000,000 people due to Hazardous Air Pollutants is the 24<sup>th</sup> lowest in the nation. In 1999, Utah had the 18<sup>th</sup> lowest person-days in exceeding the National Ambient Air Quality Standards (NAAQS) for air quality. Utah had 850,667 person days where Texas had 442,988,366 person days.

In 1996, Utah had the 16<sup>th</sup> lowest emissions of Volatile Organic Compound emissions (compounds that evaporate into the air quickly) in the country. Only 160,000 tons are emitted compared to California that emits 1.6 million tons. It was also the 16<sup>th</sup> lowest in emissions of Carbon Monoxide in 1996. The level is 905,000 tons versus California’s 7.1 million tons.

Recently, of all states and U.S. territories, Utah is the 28<sup>th</sup> lowest in its release of TRI Chemicals into the water. A TRI chemical is one that the U.S. EPA has found can be reasonably anticipated to cause acute or chronic adverse human health effects, or adverse environmental effects. Utah had 1.15 million pounds released where Pennsylvania released over 46 million pounds.

Utah is also one of the lowest producers of animal waste. In 1997 Utah produced 7.8 million tons of waste. Texas was number one with 110 million tons of waste.

Also, Utah is the 16<sup>th</sup> lowest in its non-cancer hazard index for health risks from Hazardous Air Pollutants. Utah’s index is 1.8, while New York’s is the highest, 7.6. This index is the total hazard index, summing over all HAPs with non-cancer effects in an area. Each HAP contributes its single chemical hazard index to the total.<sup>213</sup>

The Salt Lake City-Ogden area was in the top 20 nationally out of 323 smog-affected areas achieving the greatest clean-air progress since 1980.<sup>214</sup>

## **LIVABLE**

### **OVERALL LIVABILITY**

Coupled with the Utah Indoor Clean Air Act, as of 1998, Utah had the lowest percentage of its population smoking at 14.2%. The national median was 22.9%. Nevada and Kentucky were the two highest with 30.4% and 30.8% respectively.<sup>215</sup>

Utah ranks 3<sup>rd</sup> healthiest state in the nation according to United Health Group (2000) and 5<sup>th</sup> healthiest according to Morgan Quitno Press (2000).<sup>216</sup>

Salt Lake City – Ogden, Utah was ranked as the 13<sup>th</sup> best area to earn and save money in the United States for the 2000-year. This area of Utah is 12.9% above the average metropolitan area. Since 1999, wealth (what someone has, not what they spend) increased from \$66,650 to \$75,977 per household. As part of the overall ranking, this metro area ranked 7<sup>th</sup> for high job creation (4.5% increase in jobs per year).<sup>217</sup>

There are only 27.2 persons per square mile in Utah compared to the national average of 79.6.<sup>218</sup>

Rural Utah has been hailed as the top rural area to start and grow a business according to Cognetics, Inc., a Cambridge, Massachusetts research firm.<sup>219</sup> They also ranked Utah #3 in the Top Ten States for Entrepreneurs. Salt Lake City/Provo was also ranked #2 in the Top Ten Large Metro Areas for Entrepreneurs. This shows there is potential for Utah to continue to develop, thus making Utah more livable.<sup>220</sup>

The US Conference of Mayors named Salt Lake City as one of the top six most livable US cities in America.<sup>221</sup>

Utah is one of the three best-managed states in America. Michigan, Utah, and Washington all received an A- overall. In a Governing Magazine study, Utah got an A- grade or better in Financial Management, Capital Management, and Information Technology.<sup>222</sup>

The Corporation for Enterprise Development released its 2000 Development Report Card. Utah received all A's for Performance, Business Vitality, and Development Capacity. These grades were received based on several rankings within these categories. Below is how Utah ranked compared to the other 49 states (1 is the best, 50 is the worst). Utah ranked in the top ten in the following:

#### Performance

- #2 in Long-Term Employment Growth
- #1 in Involuntary Part-time Employment
- #4 in Poverty Rate
- #1 in Income Distribution
- #2 in Infant Mortality
- #1 in Heart Disease
- #1 in Charitable Giving

#### Business Vitality

- #6 in Sector Competitiveness
- #1 in Sectoral Diversity
- #5 in New Companies
- #1 in New Business Job Growth

#### Development Capacity

- #10 in High School Graduation
- #2 in High School Attainment
- #8 in College Attainment
- #5 in Loans to Deposits
- #9 in Commercial and Industrial Loans
- #9 in High Deficiency
- #10 in Bridge Deficiency
- #6 in Sewage Treatment Needs
- #8 in Energy Cost
- #1 in Conversion of Cropland to Other Uses
- #9 in Science/Engineering Graduate Students
- #2 in Households with Computers
- #9 in University Research and Development
- #9 in Royalties and Licenses
- #1 in University Spin-outs

Senior Program Director for the Corporation for Enterprise Development, William Schweke, said, “These findings show that states must make critical investments in innovation and in people in order to sustain and improve their competitiveness and business vitality. Economic success increasingly relies on human capital, sustainability, and entrepreneurship. States making strong investments in education and research are creating high quality jobs and these states are faring the best economically.” Utah was ranked in the top 10 in the above categories, but investments must be made, just as Mr. Schweke indicated.

### **RECREATION**

Utah has four of the top twenty ski resorts in the West. They are Deer Valley Resort, Park City Mountain Resort, Snowbird Ski and Summer Resort, and Alta.<sup>223</sup>

Utah has 14 ski resorts that receive an average of 500 inches of “The Greatest Snow on Earth” every winter.<sup>224</sup>

Utah has a climate that makes living here very enjoyable. Utah’s highest monthly average temperature is 93.2 degrees Fahrenheit. The lowest monthly average temperature is 19.2 degrees Fahrenheit. Utah has 88 annual days with some precipitation versus the national average of 110 days.<sup>225</sup>

Utah has:

- Five national parks (Arches, Canyonlands, Zion, Bryce, and Capitol Reef)
- Six national monuments (Cedar Breaks, Natural Bridges, Dinosaur, Rainbow Bridge, Grand Staircase-Escalante, Timpanogos Cave and Hovenweep)
- Two national recreation areas (Flaming Gorge and Glen Canyon)
- Six national forests (Ashley, Dixie, Fishlake, Manti-LaSal, Uinta, and Wasatch-Cache)

- Forty-five state parks

These total more than nine million acres of land for recreation and outdoor activities. All are within a five-hour drive from Salt Lake City.<sup>226</sup>

Utah has 11,000 miles of fishing streams and 147,000 acres of lakes and reservoirs.<sup>227</sup>

The Utah Leisure Index is 55 above the national average of 19.42.<sup>228</sup>

## **THE ARTS**

The Arts index is at 14, above the national average of 11.48.<sup>229</sup>

Salt Lake City is the smallest city in the country to boast a top-ranked symphony, dance company, and opera company.<sup>230</sup>

Utah has many fine arts available to its residents. Performing arts organizations include Ballet West, the Mormon Tabernacle Choir, Pioneer Theatre Company, Repertory Dance Theater, Ririe Woodbury Dance Company, Odyssey Dance Utah, Utah Opera Company, and The Utah Symphony. Cedar City's annual Shakespearean Festival won the 2000 Tony Award for Best Regional Theater. The Utah Arts Council represents more than 400 organizations for performing, visual, and literary arts. The Intermountain West's only collection of world art is on display at the Utah Museum of Fine Arts on the campus of the University of Utah. Other attractions include the Hansen Planetarium, the Children's Museum of Utah, and the Museum of Natural History.<sup>231</sup>

### **Utah Shakespearean Festival**

Cedar City, Utah is home to the 2000 Tony Award Winning Regional Theater The Utah Shakespearean Festival.

The Summer 2000 U.S. Outdoor Drama Magazine reported, "Receiving the Tony Award validates the professional effort, not only on the part of Adams, Cook, Harvey, and Phillips; but also the thousands of artists who have contributed to the artistic growth of the Festival over its 39-year history. The Tony Award stands in a beautiful mirrored case in the lobby to remind all who walk by that, as the producing leadership of the Festival said, 'The Tony Award has confirmed our quest for excellence and sets a clear guide for the future of the Utah Shakespearean Festival.'"<sup>232</sup>

Tracey Rayson, a reporter for TravelWise.com also reported about the festival, "Many critics have billed Cedar City's Festival as 'one of the best Shakespearean festivals in the world.' Having this renowned distinction, the desire to become a member of the acting company arouses passionate competition."<sup>233</sup>

#### History (From Festival's Website)<sup>234</sup>

The Utah Shakespearean Festival was founded in 1961 and presented its first season in 1962. It was started in response to two influences: summer tourists desiring more evening activities after visiting the area's six national parks, and a young actor's desire to produce great theatre. Festival Founder Fred C. Adams, having just come to Cedar City after trying out the New York theatre scene for a few years, was new to the College of Southern Utah (now Southern Utah University) in 1959. However, seeing 150,000 annual summer tourists to the area, he knew he had a great potential audience for a theatre festival.

Excited by the idea, he packed up his notes and ideas and visited Ashland, Oregon, the site of the granddaddy of all Shakespeare festivals, the Oregon Shakespeare Festival. While there, he closely observed operations and was befriended by Angus Bowmer, the OSF founder, whom Adams interviewed extensively. On the long ride back to Cedar City, the Utah Shakespearean Festival was born.

The initial two-week season attracted an excited 3,276 spectators, yielded a much needed \$2,000 on which to build a second season, and demonstrated the cooperative relationship between college and community which still flourishes today. This partnership is one of the reasons for the Festival's consistent growth. In 1999, over 150,000 ticket-holders viewed 185 performances in two landmark theatres during the ten-week season. The Festival is now a year-round operation with a full-time staff of 26 and a budget approaching \$5 million dollars, as well as an ongoing educational outreach program, including workshops and a touring version of one of Shakespeare's popular plays.

As part of its commitment to great theatre, the Festival fosters activities that bring Shakespeare and other great playwrights to new audiences. Through theatre, and the activities surrounding it, entire eras come to life and enrich people of all ages and from all walks of life.

#### Currently (From Festival's Website)<sup>235</sup>

**Budget** - The original budget of the Festival thirty-eight years ago was just under \$1,000, and attendance was 3,276. In 2001, the total budget is just over \$5 million, and attendance is predicted to exceed 150,000. Nearly 80 percent of the Festival's costs are funded through receipts from the box office and concessions. The balance is contributed income from memberships, foundations, and grants. The economic impact of the Festival on Cedar City and the surrounding area is immense. In 1998, total direct and indirect expenditures by the Festival and its patrons were estimated at nearly \$32 million. By 2001 that number is expected to grow to nearly \$45 million.

**Audience** - According to recent data, 65 percent of the Festival's audience comes from Utah; 20 percent from Nevada; 5 percent from Arizona; 6 percent from southern California; and the remaining 4 percent from all over the world. In 1999, the Festival had visitors from every state in the Union and seven foreign countries.

## Sundance Film Festival

Utah is also home to the Sundance Film Festival. The Sundance Institute sponsors this yearly event. A 25-member Board of Trustees, currently chaired by Walter Weisman, governs the Sundance Institute.

In 1981 Robert Redford gathered a group of colleagues and friends at Sundance, Utah to discuss new ways to enhance the artistic vitality of the American film. The result was the establishment of the Sundance Institute, dedicated to the support and development of emerging screenwriters and directors of vision, and to the national and international exhibition of new, independent dramatic and documentary films.

A nonprofit corporation, Sundance's \$10.6 million budget is met by 35% earned and 65% contributed income. Over 400 filmmakers benefit annually from Sundance's programs; over 20,000 people attend the Sundance Film Festival; millions more attend films originally developed by Sundance. The artists and films supported by the Sundance Institute are the recipients of numerous Oscar, Emmy and International Film Festival awards.

Sundance, Utah is home to the artistic activities of the Sundance Institute, creating summer and winter artists' communities. Sundance's administrative and program offices are located in Salt Lake City, Utah and in Los Angeles, California.

The 2001 Sundance Film Festival, an exhibition of work at the forefront of independent cinema. Each year, members of the programming staff of the Sundance Institute view more than 3,000 submissions to select a total of 100 or more feature-length documentary and dramatic films and 60 shorts for exhibition to an audience exceeding 20,000.<sup>236</sup>

## HEADLINES

Below are some of the examples of favorable press regarding the livability of Utah over the past ten years.<sup>237</sup>

- ***The Provo Sun, April 16, 1998:*** "Utah One of Most Livable States." Utah was recently named one of the country's top five most livable states, according to a list released last week by Morgan Quitno, a publishing and research firm. Forty-three factors were taken into consideration to determine the most livable states, including crime rate, personal income, per capita state and local tax revenue, and infant mortality rate.
- ***Money Magazine, December 1997:*** "Salt Lake City is predicted to be the nation's third hottest housing market next year."
- ***Point of View Magazine, December 1997/January 1998:*** "Salt Lake City was awarded the distinction of the third best American city to start a business. The magazine considered 75 cities, and Salt Lake City placed behind Austin, Texas and Orlando, Florida."

- ***Associated Press, November 15, 1997:*** "Real Estate Investors Eye Wasatch Front." Foreigners plan to invest billions in the Salt Lake City-Provo area for the next two decades. Foreign real estate developers have dubbed Utah's Wasatch Front as the nation's top entrepreneurial prospect area for the next two decades. The designation came at a recent economic development conference in Washington D.C., sponsored by the Association of Foreign Investors in U.S. Real Estate (AFIRE). The group has 138 members representing the Netherlands, Germany, United Kingdom, Canada, France, Singapore, and Taiwan.
- ***State Rankings and State Perspectives, 1995:*** Utah is named America's "Most Livable State" by Morgan Quitno Press of Kansas.
- ***Forbes ASAP, February 1995:*** announced the Salt Lake City (Wasatch Front) area as the best city in America to start and nurture an information-age business.
- ***Blue Chip Job Growth Update, September 1994:*** "Number One Job Creator in the Nation."
- ***Associated Press, September 10, 1994:*** "Utah is one of the six best states for raising children, according to the Washington-based research organization Child Trends Inc."
- ***Money Magazine, September 1994:*** places Provo/Orem in "The Five Best Places to Live."
- ***Fortune Magazine, June 27, 1994:*** "Provo and its surrounding suburbs are regularly cited in surveys as among the best places to live in America."
- ***The Economist, April 23, 1994:*** explains why "Utah is home to the world's second-largest concentration of information technology."
- ***Home Office Computing, November 1993:*** named Provo the fourth best city for running a home-based business.
- ***USA Today, September 17, 1993:*** lists Salt Lake City-Provo as #7 in top 25 metro areas.
- ***Money Magazine, September 1993:*** again includes Provo/Orem as one of the top places to live.
- ***Time Magazine, September 6, 1993:*** "The good news belt...where personal incomes grew 8%."
- ***Fortune Magazine, February 22, 1993:*** "least expensive state for business."
- ***U.S. News and World Report, February 22, 1993:*** "Utah is emerging as one of the nation's premier high-tech meccas, with more software enterprises than California's Silicon Valley and one of the nation's largest concentrations of biotech companies. The

Beehive State is also a veritable job machine that, for the most part, sidestepped the protracted recession. In fact, for the year ended November 1992, Utah outpaced the rest of the country in job creation, turning in a 3.2 percent employment growth rate versus a paltry 0.4 percent for the nation as a whole."

- ***State Rankings and State Perspectives, January 19, 1993:*** "Utah Wins 1993 Good Health State Award" from Morgan Quitno Corporation.
- ***The 1992 Development Report Card:*** gives Utah top ratings in Economic Performance and Development Capacity.
- ***Associated Press, March 9, 1992:*** "Utah won the title of America's 'Most Livable State' because of its educated residents and low taxes, a Kansas corporation said Sunday. 'Utah simply has what people and companies are looking for,' said Scott Morgan, president of Morgan Quitno. 'The state has healthy, highly educated residents; relatively low taxes and little poverty.'
- ***New York Times, December 6, 1992:*** "...great skiing, spectacular scenery, low real estate prices, minuscule crime rate, quick commutes, and dedicated work force."
- ***Salt Lake Tribune, August 30, 1991:*** New York writer ponders "...pictures of blue skies and mountains in Provo."
- ***New York Times, August 25, 1991:*** "While the nation's economy has shrunk in the current recession, job growth in Utah has averaged about 4 percent in the last two years."
- ***Money Magazine, September 1991:*** "Our No. 1 place to live this year: Provo-Orem, Utah, the sister cities (pop. 263,600) where the living is easy, taxes are moderate and the economic engine is running on all cylinders."
- ***Time Magazine, July 29, 1991:*** "Utah boasts the nation's youngest best-educated and most productive work force."
- ***U.S. Conference of Mayors, June 17, 1991:*** "Provo, Utah, Wins First-Place City Livability Award for Courageous Economic Development Strategy."
- ***Fortune Magazine, Jan 14, 1991:*** "Utah home to America's most productive workers, is seemingly recession-proof. After Silicon Valley and North Carolina's Research Triangle. The Provo-Orem area has become the nation's third-largest cluster of high-tech enterprises, predominantly software outfits such as WordPerfect and Novell."

## CONCLUSION

Utah is one of the best places in the world to live and do business. The facts outlined in this paper prove that Utah is; a Place of New Ideas; has a Growing Workforce; is Education Minded and Tech Savvy; Affordable; Safe, Clean and Livable. This information will be helpful for the presentation of Utah as a great state in which to do business. As this information is used strategically, Utah will be able to gain the attention it needs to succeed. By using this information and working with DSW Partners, Utah can form brands and leverage the associations of Utah people already have. The next step is to figure out who is the audience and then consistently promote the brand.



## Endnotes

---

- <sup>1</sup> <http://www.office.com/global/0,2724,1974-17250,FF.html>, June 26, 2001.
- <sup>2</sup> Ibid.
- <sup>3</sup> Chris Pressler, Personal Interview, Dr. Michael Swenson, May 17, 2001.
- <sup>4</sup> "The 10 Commandments of Power Positioning," Dr. Michel Fortrin, 1998.
- <sup>5</sup> Aaker, David and Erich Joachimsthaler, *Brand Leadership*, p. 17, 2000.
- <sup>6</sup> Ibid.
- <sup>7</sup> <http://www.positioning.com/html/concepts.html>, June 26, 2001.
- <sup>8</sup> Ibid.
- <sup>9</sup> Ries, Al and Jack Trout, *Positioning: The Battle For Your Mind*, pp. 193-198, 1986.
- <sup>10</sup> Ibid.
- <sup>11</sup> <http://www.determan.net/Michele/mposition.htm>, June 26, 2001.
- <sup>12</sup> <http://www.office.com/global/0,2724,1974-17250,FF.html>, June 26, 2001.
- <sup>13</sup> [http://www.saltlakechamber.org/visitors\\_info/](http://www.saltlakechamber.org/visitors_info/), July 3, 2001.
- <sup>14</sup> <http://news.morningstar.com/news/BW/M04/D24/88142641570.html>
- <sup>15</sup> <http://www.caldera.com/company/profile.html>
- <sup>16</sup> <http://www.lineo.com/company/history.html>
- <sup>17</sup> <http://www.tirgan.com/leustat.htm>
- <sup>18</sup> Bingham, Craig, Personal Interview, Leon "Priz" Przybyla, Associate Director BYU Technology Transfer Office, June 27, 2001
- <sup>19</sup> <http://volta.byu.edu/REU/research.htm>
- <sup>20</sup> Bingham, Craig, Personal Interview, Leon "Priz" Przybyla, Associate Director BYU Technology Transfer Office, June 27, 2001
- <sup>21</sup> <http://www.moxtek.com>
- <sup>22</sup> Bingham, Craig, Personal Interview, Greg Stewart, CEO Moxtec, June 28, 2001
- <sup>23</sup> <http://www.wavetronix.com>
- <sup>24</sup> <http://www.aj-design.com/AboutUs.htm>
- <sup>25</sup> <http://search.britannica.com/search?ref=A01001&query=mass+spectrometry&exact>
- <sup>26</sup> Bingham, Craig, Personal Interview, Leon "Priz" Przybyla, Associate Director BYU Technology Transfer Office, June 27, 2001
- <sup>27</sup> Ibid.
- <sup>28</sup> <http://www.gignews.com/zygote1.htm>
- <sup>29</sup> <http://www.ems-i.com/netpagz/about.htm>
- <sup>30</sup> <http://www.novell.com/text/news/press/pressroom/history.html>
- <sup>31</sup> <http://www.volera.com>
- <sup>32</sup> <http://www.nwfusion.com/news/2001/0521volera.html>
- <sup>33</sup> [http://www.fitnessoft.com/AlmostPerfect/ap\\_0intro.html](http://www.fitnessoft.com/AlmostPerfect/ap_0intro.html)
- <sup>34</sup> <http://www.mycomputer.com>
- <sup>35</sup> <http://www.noiseworks.com/Noiseworks/noiseworks.nsf/ClientsNetObjects/F03A313BEC43150A8025698C0058FD53>
- <sup>36</sup> <http://www.whizbanglabs.com>
- <sup>37</sup> <http://www.editorandpublisher.com/ephome/news/newshtml/stories/060101n4.htm>
- <sup>38</sup> <http://biz.yahoo.com/bw/010530/2019.html>
- <sup>39</sup> <http://www.brooktrout.com/pages/news/press/1998/980915.htm>
- <sup>40</sup> <http://www.1800contacts.com/>
- <sup>41</sup> [http://home.verio.com/company/newsroom/1998/in\\_03\\_12\\_98\\_c.cfm](http://home.verio.com/company/newsroom/1998/in_03_12_98_c.cfm)
- <sup>42</sup> <http://www.ussynthetic.com/aboutus/>
- <sup>43</sup> <http://www.perfectpractice.md/>
- <sup>44</sup> <http://www.upside.com/Ebiz/39e763270.html>
- <sup>45</sup> <http://deseretnews.com/dn/view/0,1249,295007037,00.html?textfield=Poket>
- <sup>46</sup> [http://www.chem.ucla.edu/dept/alumni/Boyer\\_bio.html](http://www.chem.ucla.edu/dept/alumni/Boyer_bio.html)
- <sup>47</sup> [http://www.et.byu.edu/~tom/family/Harvey\\_Fletcher/harvey\\_fletcher.html](http://www.et.byu.edu/~tom/family/Harvey_Fletcher/harvey_fletcher.html)
- <sup>48</sup> [http://www.et.byu.edu/~tom/family/Harvey\\_Fletcher/Harvey\\_Tribute.html](http://www.et.byu.edu/~tom/family/Harvey_Fletcher/Harvey_Tribute.html)
- <sup>49</sup> [http://marriottschool.byu.edu/cfe/Founders/Individuals/Jenkins\\_Steve.html](http://marriottschool.byu.edu/cfe/Founders/Individuals/Jenkins_Steve.html)

---

<sup>50</sup> <http://www.powerschool.com/press/000627.html>  
<sup>51</sup> <http://sacramento.bcentral.com/sacramento/stories/2001/04/16/focus6.html>  
<sup>52</sup> <http://www.cerberian.com>  
<sup>53</sup> <http://marriottschool.byu.edu/cfe/entrepreneur/aug00.html>  
<sup>54</sup> [http://www.webmiles.com/aboutus/board\\_of\\_directors.html](http://www.webmiles.com/aboutus/board_of_directors.html)  
<sup>55</sup> Ibid.  
<sup>56</sup> <http://www.nuskinenterprises.com>  
<sup>57</sup> Ibid.  
<sup>58</sup> <http://marriottschool.byu.edu/marriottmag/summer01/alumni/index.cfm?loc=alumni>  
<sup>59</sup> <http://www.helios.com>  
<sup>60</sup> <http://www.studentadvantage.lycos.com/lycos/article/0,4683,c2-i22-t0-a16189,00.html>  
<sup>61</sup> <http://www.ifpi.org/press/20010509.html>  
<sup>62</sup> <http://www.fantasticsams.com/ocbj.html>  
<sup>63</sup> [http://www.edgix.com/about/management\\_content.html](http://www.edgix.com/about/management_content.html)  
<sup>64</sup> <http://www.research.utah.edu/enterprise/#reality>  
<sup>65</sup> <http://webopedia.internet.com/TERM/A/ARPANET.html>  
<sup>66</sup> Ibid.  
<sup>67</sup> Ibid.  
<sup>68</sup> <http://www.research.utah.edu/enterprise/#reality>  
<sup>69</sup> Technology Transfer Office, University of Utah, "Directory of Companies based on University of Utah Technology and Utah Licensees" Copyright 1998  
<sup>70</sup> <http://www.dced.state.ut.us/techdev/IQSARCOS.htm>  
<sup>71</sup> <http://www.dced.state.ut.us/techdev/IQSARCOS.htm>  
<sup>72</sup> Ibid.  
<sup>73</sup> Technology Transfer Office, University of Utah, "Directory of Companies based on University of Utah Technology and Utah Licensees" Copyright 1998  
<sup>74</sup> <http://whiteworld.com/novstory/surf01.htm>  
<sup>75</sup> <http://www.alumni.utah.edu/continuum/winter99/invention.htm>  
<sup>76</sup> Ibid.  
<sup>77</sup> Ibid.  
<sup>78</sup> Ibid.  
<sup>79</sup> Ibid.  
<sup>80</sup> <http://www.mech.utah.edu/~jacobsen/>  
<sup>81</sup> [http://209.146.26.198/teachers/icdv2i2s/SITES/ACHIEVE/kol0bio\\_.htm](http://209.146.26.198/teachers/icdv2i2s/SITES/ACHIEVE/kol0bio_.htm)  
<sup>82</sup> Ibid.  
<sup>83</sup> Ibid.  
<sup>84</sup> Ibid.  
<sup>85</sup> Ibid.  
<sup>86</sup> Ibid.  
<sup>87</sup> [http://www.usc.edu/isd/publications/networker/95-96/Mar\\_Apr\\_96/innerview.warnock.html](http://www.usc.edu/isd/publications/networker/95-96/Mar_Apr_96/innerview.warnock.html)  
<sup>88</sup> <http://www.cs.utah.edu/dept/history>  
<sup>89</sup> [http://class.et.byu.edu/mfg202/PapersProjects/past\\_projects/Sam%20Ashton/wpstarts.html](http://class.et.byu.edu/mfg202/PapersProjects/past_projects/Sam%20Ashton/wpstarts.html)  
<sup>90</sup> <http://ei.cs.vt.edu/~history/GASCH.KAY.HTML>  
<sup>91</sup> <http://www3.itu.ch/TELECOM/wt95/pressdocs/profiles/clarkbio.html>  
<sup>92</sup> <http://www.thestandard.com/people/profile/0,1923,1352,00.html>  
<sup>93</sup> [http://www.es.com/about\\_eands/history/index.asp](http://www.es.com/about_eands/history/index.asp)  
<sup>94</sup> Ibid.  
<sup>95</sup> Ibid.  
<sup>96</sup> Ibid.  
<sup>97</sup> Ibid.  
<sup>98</sup> Ibid.  
<sup>99</sup> <http://www.networkbuyersguide.com/search/221000.htm>  
<sup>100</sup> Ibid.  
<sup>101</sup> <http://history.acusd.edu/gen/recording/stockham.html>  
<sup>102</sup> <http://mane.mech.virginia.edu/~enr160/Graphics/GH70.html>

---

103 Ibid.  
104 Ibid.  
105 <http://www.cs.unc.edu/~fuchs/>  
106 <http://www.cs.unc.edu/~pxpl/>  
107 Ibid.  
108 Ibid.  
109 Ibid.  
110 [http://www.tools-conferences.com/usa\\_98/keynotes2.html](http://www.tools-conferences.com/usa_98/keynotes2.html)  
111 Ibid.  
112 Ibid.  
113 <http://www.zdnet.com/products/vmluser/perspectives/mp.conference.html>  
114 <http://www.carbontech.net/htmldocs/press/1997/pr062397.html>  
115 <http://www.htracyhall.org/History/bio.htm>  
116 [http://www.pixar.com/aboutpixar/m\\_mngmnt.html](http://www.pixar.com/aboutpixar/m_mngmnt.html)  
117 [http://www.usc.edu/isd/publications/networker/97-98/Sep\\_Oct\\_97/innerview-catmull.html](http://www.usc.edu/isd/publications/networker/97-98/Sep_Oct_97/innerview-catmull.html)  
118 Ibid.  
119 <http://www.metroactive.com/papers/metro/09.16.99/cover/bushnell2-9937.html>  
120 <http://www.stanford.edu/~avenger/e2000.html>  
121 [http://www.adherents.com/lit/sf\\_other.html](http://www.adherents.com/lit/sf_other.html)  
122 <http://www.usu.edu/~techcomm/spinoff.html#sdl>  
123 Ibid.  
124 Ibid.  
125 <http://www.usu.edu/~techcomm/spinoff.html#wes>  
126 <http://www.aps.org/BAPS4CF98/abs/S800006.html>  
127 [http://www.cinemedia.net/SFCV-RMIT-Annex/rnaughton/FARNSWORTH\\_BIO.html](http://www.cinemedia.net/SFCV-RMIT-Annex/rnaughton/FARNSWORTH_BIO.html)  
128 Ibid.  
129 <http://marriottschool.byu.edu/story/marriotts.htm>  
130 [http://www.hotel-online.com/Neo/News/PressReleases2000\\_2nd/Apr00\\_AliceMarriott.html](http://www.hotel-online.com/Neo/News/PressReleases2000_2nd/Apr00_AliceMarriott.html)  
131 <http://history.utah.org/ForKids/kfamous.html>  
132 <http://www.media.utah.edu/UHE/b/BOSONE,REVA.html>  
133 [http://www.firearmshistory.com/firearms\\_designers\\_and\\_contributors/john\\_m\\_browning.html](http://www.firearmshistory.com/firearms_designers_and_contributors/john_m_browning.html)  
134 <http://www.dynotech.com/GUNS/browning.htm>  
135 <http://www.media.utah.edu/UHE/c/CANNON,MARTHA.html>  
136 [http://www.umar.edu/~somm/jackling/daniel\\_jackling\\_bio.html](http://www.umar.edu/~somm/jackling/daniel_jackling_bio.html)  
137 <http://www.media.utah.edu/UHE/e/ECCLES,MARINER.html>  
138 <http://www.media.utah.edu/UHE/w/WESTWOOD,JEAN.html>  
139 <http://www.bartleby.com/65/ro/Ross-Har.html>  
140 [http://www.slcc.edu/schools/hum\\_sci/physics/whatis/biography/garn.html](http://www.slcc.edu/schools/hum_sci/physics/whatis/biography/garn.html)  
141 <http://www.syquest.com/press/1997/pr71497.html>  
142 <http://www.jobcircle.com/career/profiles/48.html>  
143 <http://www.iconfitness.com/icon/handbook.html>  
144 [http://world.visualwebtools.com/00/00/66/8C/news\\_and\\_press.html](http://world.visualwebtools.com/00/00/66/8C/news_and_press.html)  
145 <http://www.kiomag.com/news/052401-7.shtml>  
146 <http://www.bd.com/infusion/about/>  
147 [http://www.myfamilyinc.com/about\\_us/xbios.htm](http://www.myfamilyinc.com/about_us/xbios.htm)  
148 Ibid.  
149 <http://www.webhire.com/about/customers.asp>  
150 <http://www.airswitch.com/About.htm>  
151 [http://www.lexisone.com/legalresearch/legalguide/ecommerce\\_center/ecommerce\\_payment\\_directory.htm](http://www.lexisone.com/legalresearch/legalguide/ecommerce_center/ecommerce_payment_directory.htm)  
152 [http://www.go2net.com/corporate/press/1999/07\\_01.html](http://www.go2net.com/corporate/press/1999/07_01.html)  
153 [http://utahbusiness.com/daily\\_briefings.cfm](http://utahbusiness.com/daily_briefings.cfm)  
154 [http://ace.byu.edu/backup/SGarticles/sg04\\_11\\_99.html](http://ace.byu.edu/backup/SGarticles/sg04_11_99.html)  
155 <http://www.hoovers.com/co/capsule/9/0,2163,40229,00.html>  
156 [http://marriottschool.byu.edu/cfe/Founders/Individuals/Gibson\\_Larry.html](http://marriottschool.byu.edu/cfe/Founders/Individuals/Gibson_Larry.html)

---

<sup>157</sup> <http://www.dentrix.com/dx-office.html>  
<sup>158</sup> <http://www.politis.com/UTechWatch/col29.htm>  
<sup>159</sup> Ibid.  
<sup>160</sup> <http://www.teklution.com>  
<sup>161</sup> Economic Report to the Governor 2000  
<sup>162</sup> <http://quickfacts.census.gov/qfd/states/49000.html>, July 2, 2001.  
<sup>163</sup> <http://www.edcutah.org/edc/glance.htm>, July 3, 2001.  
<sup>164</sup> State Rankings 2001: A Statistical View of the 50 United States. Morgan Quitno, p. 174, 2001.  
<sup>165</sup> Statistical Abstract of the United States: 2000, US Census Bureau, Table No. 253.  
<sup>166</sup> <http://www.edcutah.org/edc/glance.htm>, July 3, 2001.  
<sup>167</sup> <http://clinton4.nara.gov/textonly/WH/Accomplishments/states/Utah.html>  
<sup>168</sup> Ibid.  
<sup>169</sup> Utah Foundation Research Report, November 1999.  
<sup>170</sup> [http://www.msubillings.edu/caer/quality\\_rankings\\_of\\_education\\_in.htm#\\_ftn4](http://www.msubillings.edu/caer/quality_rankings_of_education_in.htm#_ftn4), July 5, 2001.  
<sup>171</sup> State Rankings 2001: A Statistical View of the 50 United States. Morgan Quitno, 2001.  
<sup>172</sup> <http://www.edcutah.org/edc/glance.htm>, July 3, 2001  
<sup>173</sup> <http://www.olemiss.edu/sports/newfast-p/1997news/103097softball.htm>, July 3, 2001.  
<sup>174</sup> [http://www.senate.gov/~hatch/state\\_163.html](http://www.senate.gov/~hatch/state_163.html), July 3, 2001.  
<sup>175</sup> Ibid.  
<sup>176</sup> <http://www.umass.edu/newsoffice/archive/2001/050101microsoft.html>, July 3, 2001.  
<sup>177</sup> <http://www.nea.org/publiced/goodnews/ut.html>, July 3, 2001.  
<sup>178</sup> Ibid.  
<sup>179</sup> Burton, Joseph and Lydia Peralta, "Utah Technology Report: State Rankings," page 94, June 2001.  
<sup>180</sup> <http://deseretnews.com/dn/view/0,1249,200007386,00.html>, May 9, 2001.  
<sup>181</sup> Atkinson, Robert and Paul Gottlieb. The Metropolitan New Economy Index, April 2001.  
<sup>182</sup> Ibid, page 101.  
<sup>183</sup> <http://txdtm01.tax.ex.state.ut.us/pr/efilefeb8.HTM>, June 19, 2001.  
<sup>184</sup> <http://www.ilumin.com/company/milestones.asp>, July 2, 2001.  
<sup>185</sup> Ibid, page 31.  
<sup>186</sup> Burt, Michael and Francis Markey, "Cost of Doing Business," Regional Financial Review, November 2000.  
<sup>187</sup> <http://deseretnews.com/dn/view/0,1249,295007224,00.html>, June 28, 2001.  
<sup>188</sup> State Rankings 2001: A Statistical View of the 50 United States, Morgan Quitno, 2001.  
<sup>189</sup> Chris Pressler, Personal Interview, Doug Jex, June 29, 2001.  
<sup>190</sup> Loomis, Brandon "Leavitt: Perk Up Smart Growth." The Salt Lake Tribune, June 14, 2001.  
<sup>191</sup> State Rankings 2001: A Statistical View of the 50 United States, Morgan Quitno, 2001.  
<sup>192</sup> <http://measuringup2000.highereducation.org/Affordability.cfm>, July 3, 2001.  
<sup>193</sup> <http://nt.mortgage101.com/partner-scripts/1150.asp?p=mtg101>, July 3, 2001 &  
<http://www.homefair.com/usr/cityrepstatepick.html>, July 5, 2001.  
<sup>194</sup> <http://www.homefair.com/usr/cityrepstatepick.html>, July 5, 2001.  
<sup>195</sup> Ibid.  
<sup>196</sup> <http://nt.mortgage101.com/partner-scripts/1150.asp?p=mtg101>, July 3, 2001 &  
<http://www.homefair.com/usr/cityrepstatepick.html>, July 5, 2001.  
<sup>197</sup> Ibid.  
<sup>198</sup> Ibid.  
<sup>199</sup> [http://www.tbhonline.com/cns/9907/990702crime\\_hate.htm](http://www.tbhonline.com/cns/9907/990702crime_hate.htm)  
<sup>200</sup> <http://www.bci.state.ut.us/crimebook/CIU00/LocalAgencyOver.htm>  
<sup>201</sup> Utah Commission on Criminal and Juvenile Justice: Annual Report 2001.  
<sup>202</sup> <http://www.justice.state.ut.us/Research/2000CrimeStats/UtahCompareUS.htm>  
<sup>203</sup> <http://www.morganquitno.com/cit01safe.htm>, June 29, 2001.  
<sup>204</sup> <http://clinton4.nara.gov/textonly/WH/Accomplishments/states/Utah.html>, June 29, 2001.  
<sup>205</sup> State Rankings 2001: A Statistical View of the 50 United States. Morgan Quitno, 2001.  
<sup>206</sup> Ropp, Thomas "Self Ranks Phoenix No. 86 in Health," Arizona Republic, October 17, 2000.  
<sup>207</sup> <http://www.rules.state.ut.us/publicat/code/r392/r392-510.htm>, July 2, 2001.  
<sup>208</sup> Wolfson, Hannah "Utah Sets Up New State Official: Porn Czar," Associated Press, March 17, 2001.  
<sup>209</sup> <http://www.rules.state.ut.us/publicat/code/r203/r203-001.htm#T15>, July 2, 2001.

- 
- <sup>210</sup> Mitchell, Lesley “Goodbye, Gas Guzzler: Natural Gas Slowly Wins Converts,” Salt Lake Tribune, June 2, 2001.
- <sup>211</sup> Ginsberg, Steven “Virginia Officials Weigh High-Tech Emissions Checks”, Washington Post, May 24, 2001.
- <sup>212</sup> State Rankings 2001: A Statistical View of the 50 United States. Morgan Quitno, 2001.
- <sup>213</sup> <http://www.scorecard.org/ranking/>, July 6, 2001.
- <sup>214</sup> Fay, Bill “Utah Air Could Be Better, But It Is Much Better Than 20 Years Ago,” Salt Lake Tribune, February 4, 2001.
- <sup>215</sup> Statistical Abstract of the United States: 2000, US Census Bureau, Table No. 227.
- <sup>216</sup> State Rankings 2001: A Statistical View of the 50 United States. Morgan Quitno, 2001.
- <sup>217</sup> “The Best Cities to Earn and Save Money: A Ranking of the 125 Largest U.S. Cities,” ReliaStar Financial Corp. 2000.
- <sup>218</sup> <http://quickfacts.census.gov/qfd/states/49000.html>, July 2, 2001.
- <sup>219</sup> Ibid.
- <sup>220</sup> Burton, Joseph and Lydia Peralta, “Utah Technology Report: State Rankings,” page 110, June 2001.
- <sup>221</sup> “Mayors Name SLC a ‘Most Livable’ City,” Deseret News, June 24, 2001.
- <sup>222</sup> <http://www.governing.com/gpp/gp1glanc.htm>, July 5, 2001.
- <sup>223</sup> <http://www.20best.com/20best/travel/SkiResorts-West.asp>, July 12, 2001.
- <sup>224</sup> Ibid.
- <sup>225</sup> World Almanac of the U.S.A, Primedia Reference, Inc., Part 2: Portraits of the States – Utah, 1998.
- <sup>226</sup> Ibid. & <http://www.50states.com/facts/utah.htm>, July 3, 2001.
- <sup>227</sup> <http://www.50states.com/facts/utah.htm>, July 3, 2001.
- <sup>228</sup> [http://www.money.com/money/depts/tools/bplive\\_citypages/SALTL\\_UT.html](http://www.money.com/money/depts/tools/bplive_citypages/SALTL_UT.html), June 20, 2001.
- <sup>229</sup> [http://www.money.com/money/depts/tools/bplive\\_citypages/SALTL\\_UT.html](http://www.money.com/money/depts/tools/bplive_citypages/SALTL_UT.html), June 20, 2001.
- <sup>230</sup> World Almanac of the U.S.A, Primedia Reference, Inc., Part 2: Portraits of the States – Utah, 1998.
- <sup>231</sup> <http://www.edcutah.org/edc/glance.htm>, July 3, 2001.
- <sup>232</sup> <http://www.unc.edu/depts/outdoor/news/USFwinsTonysummer2000.html>, July 11, 2001.
- <sup>233</sup> <http://www.travel-wise.com/destination/utah/utahh.htm>, July 11, 2001.
- <sup>234</sup> <http://www.bard.org/SectionAbout/History.html>, July 11, 2001.
- <sup>235</sup> <http://www.bard.org/SectionAbout/quickfacts.html>, July 11, 2001.
- <sup>236</sup> <http://www.sundance.org/Institute/index.htm>, July 11, 2001.
- <sup>237</sup> <http://www.utah-real-estate.com/media.html>, July 2, 2001

---